

June 8, 2000

United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

Attn.: Mr. Juan Thomas
RCRA Corrective Action Manager

Re: Schedule of Field Activities
Phase III Revised RFI
Johnson Controls Facility, Fowlerville, MI

At the request of Johnson Controls, Inc. (JCI), URS Dames & Moore prepared the following schedule of activities for the Phase III Field Sampling Event. All field activities will be conducted in accordance with the Phase III Revised RFI Work Plan dated December 3, 1999, and modified March 30, 2000 and May 8, 2000

WEEK OF JUNE 12 TO JUNE 16, 2000

Monday, June 12, 2000:	Arrive on site, inspect site conditions, and collect water level measurements all monitoring wells.
Tuesday, June 13, 2000:	Groundwater sampling;
Wednesday, June 14, 2000:	Groundwater sampling;
Thursday, June 14, 2000:	Groundwater sampling, river sediment and riverbank soil sampling
Friday, June 16, 2000:	River sediment and riverbank soil sampling; stake out boring locations for TCE investigation sampling scheduled for the week of June 19, 2000.

WEEK OF JUNE 19 TO JUNE 23, 2000

Monday, June 19, 2000:	Set up for drilling, construct decontamination pad, set-up for drilling on Tuesday.
Tuesday, June 20, 2000:	TCE Investigation: Geoprobe and groundwater sampling
Wednesday, June 21, 2000:	TCE Investigation: Geoprobe and groundwater sampling
Thursday, June 22, 2000:	TCE Investigation: Geoprobe and groundwater sampling
Friday, June 23, 2000:	TCE Investigation: Geoprobe and groundwater sampling

This schedule is tentative and is subject to change, pending the progress per day.


-oo0oo-

If there are any questions regarding this schedule, please direct them to Mr. Michael Stoelton at JCI at (734) 254-5657 or to the undersigned.

Very truly yours,
DAMES & MOORE



Michael A. Wagner
Project Manager



Dennis P. Connair, C.P.G.
Associate

MAW/DPC:JCI(016)121
20209-016-121

cc: Mr. George Mileskiy, JCI
Mr. Michael Stoelton, JCI
Mr. Dennis Reis, Quarles & Brady LLP
Ms. Jackie Wetzstoen, The Stanley Works

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CORRESPONDENCE CHRONOLOGY
(from Task 10 Phase II RFI dated June 1994)

STANLEY TOOLS
FOWLerville, MI

Date	Notes
9/26/86	EPA issues draft RFI consent Order.
9/18/87	RFI - <i>Description of Current Conditions</i> (Task 1) submitted to USEPA.
10/12/87	RFI - <i>RFI Scope of Work</i> (Task 2) submitted to USEPA.
4/22/88	RFI - <i>RFI Strategy Report</i> (Task 3) submitted to USEPA
9/9/88	RFI - Effective Date of Consent Order
Fall 1990 to Spring 1991	RFI - Phase I Field Activities Conducted. BCR - Found buried containers near SWM Units B & C
5/6/91	BCR <i>Buried Container Removal Plan</i> transmitted to USEPA.
9/91	RFI - <i>RFI Phase I Results</i> submitted to USEPA.
10/8/93	RFI - <i>Phase II Work Plan</i> submitted; amended on 12/23/93; verbal approval on 2/2/94.
11/23/93	RFI - <i>Interim Remedial Measures (IRM) Work Plan</i> was transmitted to USEPA; approved on March 23, 1994.
1/7 to 4/26/94	RFI - Phase II Field Activities Conducted
6/22/94	RFI - <i>RFI Report</i> (Task 10) and <i>Preliminary Evaluation of Corrective Measures Technology</i> (PECMT) (Task 11) submitted to USEPA.
9/9/94	RFI - <i>Closure Certification of RCRA Impoundment</i> (Unit A) submitted to Michigan Department of Natural Resources; approved on 6/5/95.
10/18/94	RFI - <i>Trichloroethene (TCE) Source Investigation Work Plan</i> submitted to USEPA. Verbally approved during USEPA meeting on 7/21/95.

CORRESPONDENCE CHRONOLOGY (Continued)

10/26/94 to 4/26/95	RFI - IRM Field Activities conducted. <ul style="list-style-type: none"> Excavation and off-site disposal of sludge materials in Units F, G, H, and I. Field Activities hiatus between 1/95 and 4/17/95 due to weather.
	BCR - Field activities between 4/17 and 4/26/95. <ul style="list-style-type: none"> 12 drums and surrounding soil removed.
12/2/94	Internal <i>Analysis of Potential Remediation Scenarios</i> was submitted to representatives of Stanley Tools and Johnson Controls to assist in the settlement negotiations.
2/24/95	RFI - <i>Flow Analysis; Offsite Groundwater Elevations</i> letter report submitted to USEPA.
6/6/95	RFI - <i>Interim Remedial Measures Implementation Report</i> submitted to USEPA.
7/10/95	BCR - <i>BCR Implementation Report</i> submitted to USEPA.
7/11/95	RFI - EPA letter granting partial approval of Task 10- <i>RFI Report</i> (6/22/94); final approval of <i>IRM Implementation Report</i> (6/6/95) and Task 11 <i>PECMT Report</i> (6/22/94).
7/21/95	RFI - Meeting with USEPA <ol style="list-style-type: none"> USEPA intended to withdraw or modify the 7/11/95 letter. Stanley requests to remove the Task 11 PECMT report to allow Stanley to revise document according to suggestions made by USEPA. (Cursory review of 7/21/95 meeting discussed in Bi-monthly Report No. 42)
2/20/96	Transfer of electronic copies to Johnson Controls (Letter from Dames & Moore to Johnson Controls). Based on last bi-monthly report (No. 45), USEPA had not replied to the RFI Report (Task 10); the PECMT Report (Task 11) was not resubmitted. The TCE Source investigation was not conducted.

RFI - Resource Conservation and Recovery Act ("RCRA") Facility Investigation.
BCR - Buried Container Recovery Activities

STATUS AS OF FEBRUARY 20, 1996

**FORMER STANLEY TOOLS FACILITY
FOWLerville, MI**

-
- 1) Former impoundment system (Unit A) is closed. Closure Certification report was submitted September 9, 1994 and approved by Michigan Department of Natural Resources in June 1995.
 - 2) RFI Report (Task 10) was still under review of U.S. EPA, as discussed during 7/11/95 meeting (Cursory review of 7/21/95 meeting discussed in Bi-monthly Report No. 42).
 - 3) The Preliminary Evaluation of Corrective Measures Technologies (PECMT) (Task 11) was returned to Stanley for revisions.
REASON: EPA revealed (at the 7/21/95 meeting) that they will allow the Task 11 report to eliminate certain units/areas of the site from the CMS, if appropriate (Cursory review of 7/21/95 meeting discussed in Bi-monthly Report No. 42).
 - 4) The TCE workplan was submitted on October 18, 1994 and approved by US EPA on July 11, 1995. This investigation has not been conducted.

SUPPLEMENTAL GROUNDWATER CHRONOLOGY

FORMER STANLEY TOOLS FACILITY FOWLerville, MI

Date	Notes
3/25/85	<i>Closure Plan and Cost Estimate</i> for the surface impoundment system was prepared by ENVIRON Corporation and amended by an addendum submitted by Stanley dated September 20, 1985. U.S. EPA granted conditional approval on September 27, 1985; Michigan Department of Natural Resources (MDNR) granted approval on November 8, 1985.
October 1985 to July 1986	Actual Closure Activities were conducted. Inclement weather forced suspension of field activities between November 1985 and July 1986.
January to February 1994	RCRA - RFI Phase II field activities included soil sampling in the vicinity of the surface impoundment system.
September 9, 1994	RCRA - <i>RCRA Closure Certification</i> of the surface <i>impoundment</i> system submitted to U.S. EPA.
January 1995	Quarterly Groundwater sampling
February 23, 1995	- <i>GWQA Sampling & Analysis Plan</i> submitted to U.S. EPA.
February 28, 1995	- <i>Ground Water Quality Assessment - 1994</i> submitted to U.S. EPA.
April 1995	Quarterly Groundwater sampling.
June 5, 1995	Received approval letter from MDNR for Closure certification of the RCRA impoundment system. Quarterly groundwater monitoring was discontinued.

TABLE 3-10

DAILY FIELD ACTIVITY SUMMARY
PHASE I RFI
APRIL 15 - AUGUST 1, 1991

STANLEY TOOLS
FOWLERVILLE, MICHIGAN

April 15:	Mobilize to site. Mobilize drillers to site for soil borings.
April 16:	Sample soil borings B-1 and B-2. General site reconnaissance and organization.
April 17:	Sample soil borings B-3, B-4, B-5, B-6, and C-1.
April 18:	Sample soil borings C-2, C-3, E-1, E-2, and S-1. Sample Red Cedar River bank soils, bed sediment, and surface water at Station RC-5.
April 19:	Sample soil boring J-2 and J-3. Sample Red Cedar River bank soil, and surface water at Stations RC-4 and RC-3 and bed sediment at Station RC-4.
April 20:	Sample Red Cedar River bed sediment at Station RC-3.
April 21:	Decontaminate dedicated Teflon™ bailers for ground water monitoring well sampling.
April 22:	Sample soil borings K-1, K-2, and L-1. Sample Red Cedar River bank soil, bed sediment, and surface water at Stations RC-4 and RC-5.
April 23:	Preparation for ground water sampling. Organization of equipment, supplies, and sample bottles. Demobilize drillers.
April 24:	Sample ground water monitoring wells MW-BCK, MW-E1, MW-J1, and MW-J2.
April 25:	Sample ground water monitoring wells MW-A1, MW-A2, MW-C1, and MW-C2.
April 26 to April 29:	Dames & Moore offsite.
April 30:	Sample ground water monitoring wells MW-F1, MW-F2, MW-G1, and MW-G2.
May 1:	Sample ground water monitoring well MW-B1, MW-B2, MW-B3, and MW-G4.
May 2:	Sample ground water monitoring wells MW-A3, MW-A4, MW-F3, MW-F4, and MW-G3. Perform aquifer recovery test on MW-BCK.
May 3:	Perform aquifer recovery tests on MW-A1, MW-A2, MW-A3, MW-A4, MW-E1, MW-J1, and MW-J2.

TABLE 3-10 (Continued)

May 4:	Perform aquifer tests on MW-B1, MW-B2, MW-B3, MW-C1, and MW-C2. Sample ground water monitoring well MW-E2.
May 5:	Perform aquifer response test on MW-F1, MW-F2, MW-F3, MW-F4, MW-E2, and MW-G4.
May 6:	Perform aquifer response tests on MW-G1 and MW-G3. Repair casing on MW-G2 (casing had a kink in it from installation).
May 7:	Prepare for sludge sampling. Organize equipment, materials, and field notes.
May 8:	Sample sludge from Units F and I. Resampled MW-C2 due to missed holding times at the analytical laboratory.
May 9:	Sample sludge from Units G and H.
May 10:	Dames & Moore demobilize and move offsite.
May 23:	Resample Red Cedar River bed sediments from Station RC-3 and soil from boring E-1. Resampling necessary due to missed holding times at the analytical laboratory.
June 5:	Resampled sludge from Unit G due to missed holding times at the analytical laboratory.
June 20:	Resampled MW-G3 due to missed holding times at the analytical laboratory.
June 20:	Perform exploratory trenching in Unit F.
July 8:	Perform exploratory trenching in Unit G.
July 8 to July 9:	Conduct survey of all monitoring wells, sampling locations, and river gauge station.
August 1:	Conduct resurvey of horizontal locations.

TABLE 3-11
DAILY FIELD ACTIVITY SUMMARY
PHASE II RFI
JANUARY 7 - APRIL 26, 1994

STANLEY TOOLS
FOWLERVILLE, MICHIGAN

Date	Activity
January 7:	Dames & Moore mobilizes to site. General site reconnaissance and organization.
January 8:	Lay out soil sampling grid for soil grid borings. Stake Red Cedar River sediment/soil sampling locations.
January 9:	Collect sediment/soil samples from Red Cedar River locations RC-6 through RC-10.
January 10:	Collect sediment/soil samples from Red Cedar River locations RC-11 and RC-12. Drilling subcontractor mobilizes to site. Initial decontamination of drilling equipment. Install ground water monitoring well MW-L1. Drill and sample soil grid boring GB-47.
January 11:	Collect sediment sample at Red Cedar River location RC-13. Metcalf & Eddy representative arrives onsite. Install ground water monitoring well MW-K1. Begin drilling ground water monitoring well MW-BCK-3. Drill and sample soil grid borings GB-47, 48, 60, and 61. Install ground water monitoring well MW-J4.
January 12:	Install surface casing for ground water monitoring well MW-BCK-3. Install ground water monitoring wells MW-C3 and MW-E3. Drill and sample soil grid borings GB-64 and 68. Mark areas of the site for clearing to access soil grid boring locations.
January 13:	Begin drilling ground water monitoring wells MW-B4 and MW-BCK1. Drill and sample soil grid borings GB-39, 53, 54, 56, 65, and 66.
January 14:	Install surface casing at ground water monitoring well location MW-J3. Drill and sample soil grid borings GB-52, 55, 57, and 67.
January 15 to January 16:	Dames & Moore offsite.
January 17:	Install ground water monitoring well MW-BCK3. Install surface casing for ground water monitoring well MW-F5. Drill and sample soil grid boring GB-41.
January 18 to January 19:	Dames & Moore offsite due to extreme cold weather.

TABLE 3-11

(Continued)

Date	Activity
January 20:	Install ground water monitoring wells MW-B4 and MW-F4. Install surface casing at ground water monitoring well location MW-F5.
January 21:	Install ground water monitoring well MW-J3.
January 22:	Drill and sample soil grid borings GB-74, 75, 76, 81, 82, 87, 90, 95, 96, 97, and 98.
January 23:	Drill and sample sludge soil borings B-7, C-3, and E-3. Drill and sample soil grid borings GB-77, 78, 83, 84, 85, 86, and 99.
January 24:	Drill and sample soil grid borings GB-1, 42, 43, 44, 49, 59, 62, 70, 71, 73, 80, 88, and 89.
January 25:	Drill and sample soil grid borings GB-2, 3, 25, 26, 45, 46, 50, 51, 58, 63, and 79.
January 26:	Install ground water monitoring well MW-F5. Drill and sample soil grid borings GB-27, 28, 29, 30, 31, 32, and 72.
January 27:	Drill and sample soil grid boring GB-69.
January 28:	Install offsite ground water monitoring wells MW-OS1, MW-OS2, and MW-OS3. Drill and sample soil grid borings GB-11, 33, 34, 35, 36, and 37. Collect ground water piezometric levels from Phase I RFI/RCRA wells MW-A1 through MW-A4, OW-9S, and MW-BCK-2.
January 29:	Collect ground water samples from Phase I RFI/RCRA wells MW-A1 through MW-A4, OW-9S, and MW-BCK-2.
January 30 to January 31:	Dames & Moore offsite.
February 1:	Drill and sample soil grid borings GB-9, 12, 13, and 14. Well development of Phase II RFI ground water monitoring wells.
February 2:	Drill and sample soil grid borings GB-15, 16, 17, 18, 19, 20, 21, 22, and 23. Well development of Phase II RFI ground water monitoring wells.
February 3:	Drill and sample soil grid borings GB-4, 5, 6, 7, 8, 10, 24, and 38. Well development of Phase II RFI ground water monitoring wells.
February 4:	Well development of Phase II RFI ground water monitoring wells. Miscellaneous site clean up.

TABLE 3-11

(Continued)

Date	Activity
February 5:	Collect sediment samples from northern ditch (ND-1 through ND-4) and southern ditch (SD-1 through SD-3).
February 6:	Collect first round of ground water levels from Phase I and Phase II RFI monitoring wells. Drill and sample soil grid borings GB-40 and 91.
February 7:	Collect second round of ground water levels from Phase I and Phase II RFI monitoring wells. Surveying subcontractor onsite to survey soil grid borings and ground water monitoring well locations, and monitoring well elevations. Drill and install soil grid borings GB-92 and 94. Well pad construction of newly installed Phase II RFI wells.
February 8:	Collect third round of ground water levels from Phase I and Phase II RFI monitoring wells. Surveying continued. Well development and well pad construction of newly installed Phase II RFI wells. Drill and sample soil grid boring GB-93.
February 9:	Well development and well pad construction of newly installed Phase II RFI ground water monitoring wells.
February 10:	Well development and well pad construction of newly installed Phase II RFI ground water monitoring wells.
February 11 to February 14:	Dames & Moore offsite.
February 15:	Collect round of ground water levels from Phase I and Phase II RFI monitoring wells. Perform hydraulic recovery tests on monitoring wells MW-BCK1, MW-L1, and MW-B4.
February 16:	Metcalf & Eddy representative onsite. Perform hydraulic recovery tests at monitoring wells MW-B4 (second test), MW-J3, and MW-E3. Metcalf & Eddy representative offsite.
February 17:	Perform hydraulic recovery tests at monitoring wells MW-L1 and MW-BCK3.
February 18:	Perform hydraulic recovery test at monitoring well MW-F5. Collect ground water samples from monitoring wells MW-B1, MW-B2, and MW-B3.
February 19:	Collect ground water samples from monitoring wells MW-G1, MW-G2, MW-G3, MW-G4, and MW-F3.

TABLE 3-11

(Continued)

Date	Activity
February 20:	Collect ground water samples from monitoring wells MW-F1, MW-F2, MW-F3, MW-E1, and MW-E2.
February 21:	Collect ground water samples from monitoring wells MW-J1, MW-J2, MW-C1, and MW-C2.
February 22:	Metcalf & Eddy representative onsite. Collect ground water samples from monitoring wells MW-L1, MW-K1, MW-BCK1, MW-BCK3, and MW-F3 (resample for base/neutral acid compounds due to sample container breakage during shipment to laboratory). Metcalf & Eddy representative offsite.
February 23:	Collect ground water samples from monitoring wells MW-J4 and MW-E3. Purged monitoring well MW-B4.
February 24:	Collect ground water samples from monitoring wells MW-B4, MW-F5, MW-C3, and MW-J3.
February 25:	Dames & Moore demobilizes.
April 6:	Collect composite soil and ground water sample from drill cuttings and purge water accumulated during the Phase II RFI field activities.
April 26:	Collect ground water elevation measurements from all Phase I and Phase II RFI monitoring wells. Collect ground water samples from RCRA wells MW-A1 through MW-A4 and MW-BCK1.

APPENDIX A
(from *Ground Water Quality Assessment – 1994*, dated 2/28/95)

**CHRONOLOGY OF GROUND WATER MONITORING
STANLEY TOOLS PLANT
FOWLERVILLE, MICHIGAN**

1979: Keck Consultants conducted a hydrogeologic investigation for Hoover International, Inc. Keck installed 17 monitor wells, each constructed of 2-inch galvanized steel.

1979-1981: Ground water was sampled for cyanide, copper, nickel, and zinc as suggested by the Michigan Department of Natural Resources (MDNR).

January 1980: Stanley acquires Hoover property.

November 1981: Stanley begins interim status ground water monitoring program with OW-7 as the upgradient well and OW-5, OW-10, and OW-12 as the downgradient wells.

May 1982-January 1983: First year of interim monitoring sampling for primary drinking water parameters, ground water quality parameters, and indicator parameters.

May 1983: Began semiannual sampling. Statistically tested the indicator parameters and failed the Student's t-test.

August 1983. Keck prepared a ground water quality assessment plan for Stanley that added three new downgradient wells (OW-2, OW-9, and OW-11) and two river sampling locations to the sampling network.

October 1983: First round of assessment monitoring.

November 1983: Well OW-2 replaced by new well OW-2.

January 1984: Second round of assessment monitoring.

June 1984: Keck submitted a revised assessment monitoring plan that removed the indicator parameters and added copper, nickel, zinc, chromium (total), cyanide (total), and cadmium.

July 1984: First round of revised assessment monitoring.

October 1984: Second round of revised assessment monitoring.

January 1985: Third round of revised assessment monitoring.

February 1985: Environ Corporation submitted Ground Water Assessment Report.

APPENDIX A (Continued)

April 1985: Quarterly sampling.

July 1985: Quarterly sampling.

October 1985: Quarterly sampling.

January 1986: Quarterly sampling. Well OW-7 was destroyed by excavation of the surface impoundment.

April 1986: Quarterly sampling.

July 1986: Quarterly sampling. New well OW-7 installed with PVC materials.

October 1986: Quarterly sampling.

January 1987: Quarterly sampling. Analyzed for volatile organic compounds and additional cations and anions at the request of MDNR.

April 1987: Quarterly sampling.

July 1987: Quarterly sampling.

October 1987: Quarterly sampling.

January 1988: Quarterly sampling.

March 1988: Quarterly sampling.

July 1988: Quarterly sampling.

October 1988: Quarterly Sampling.

February 1989: Quarterly Sampling.

June 1989: Quarterly Sampling. Resurveyed well OW-2.

September 1989: Quarterly Sampling. Resurveyed well OW-7.

January 1990: Quarterly Sampling.

April 1990: Quarterly Sampling.

July 1990: Quarterly Sampling.

APPENDIX A (Continued)

December 1990: Quarterly Sampling. Survey wells MW-BCK, MW-A1 through MW-A4.

January 1991: Quarterly Sampling. Split samples with MDNR.

April 1991: Phase I RFI Sampling.

July 1991: Quarterly Sampling.

October 1991: Quarterly Sampling.

January 1992: Quarterly Sampling.

April 1992: Quarterly Sampling.

July 1992: Quarterly Sampling.

October 1992: Quarterly Sampling.

January 1993: Quarterly Sampling.

April 1993: Quarterly Sampling.

July 1993: Quarterly Sampling.

July 1993: Re-survey monitoring wells OW-7, OW-9S, and MW-J2

October 1993: Quarterly Sampling.

January 1994: Phase II RFI Sampling. Installation of MW-BCK1. Cease quarterly sampling of Red Cedar River.

April 1994: Quarterly Sampling. Change monitoring from MW-BCK2 (formerly MW-BCK) to MW-BCK1, and cease monitoring of OW-9S.

July 1994: Quarterly Sampling.

October 1994: Quarterly Sampling. Split samples with MDNR. Annual sampling of Red Cedar River.

TABLE 3-1

CHRONOLOGY OF PHASE III ACTIVITIES

JOHNSON CONTROLS, INC. FORMER STANLEY TOOLS FACILITY - FOWLerville, MICHIGAN

May 8, 2000: Johnson Controls, Inc. (JCI) submitted the letter regarding "Response to Conference Call Comments of May 2, 2000." This letter states a summary of the scope of work modifications to the Phase III Revised RFI Work Plan dated December 3, 1999 (and modified March 30, 2000).

May 25, 2000: Approval letter from U.S. EPA, Region 5 received.

June 12-16, 2000: Groundwater sampling of 21 wells was conducted. Sampling activities also included groundwater and river level measurements, and the locating/staking of proposed boring locations for the trichloroethylene (TCE) Source Identification objective. River sediment sampling was initially scheduled for this week, but was postponed due to an abnormally high river level for the season.

June 19-23, 2000: TCE Source Identification objective commenced. Direct-push boreholes (13) were advanced this week as soil samples were logged, screened, and selected for laboratory analysis. Mr. Bill Hopkins of Techlaw of Chicago, IL oversaw field activities between June 19 and 22, 2000 as a representative of U.S. EPA, Region 5. The scope of work for the TCE Identification objective was not completed and additional fieldwork was scheduled for the week of July 10-14, 2000.

July 10-14, 2000: Completion of TCE Identification objective. Additional 17 borings were advanced using direct-push methods. Mr. Bill Hopkins of Techlaw and Mr. Juan Thomas of U.S. EPA, Region 5 were present onsite for oversight on July 11, 2000. A free-product sample was collected from monitoring well MW-C3 on July 11, 2000 for fingerprint analysis.

July 24, 2000: JCI formally requested an extension to conduct the field activities at the Former Stanley Tools Facility. This extension was requested in order to collect the Red Cedar River samples during a period of low water flow.

August 9, 2000: U.S. EPA formally approved the request for an extension allowing river sediment sampling schedule to be extended to September 11, 2000 and the Phase III RFI report to be submitted by November 20, 2000.

TABLE 3-1 (Continued)

September 6-8, 2000: Red Cedar River sediment and riverbank soil sample collection was conducted. River sediment samples were collected from 13 river locations (RC-15 to RC-25). Riverbank soil samples were collected orthogonal from 6 of the river sediment locations. Sediment/soil samples were also collected from four locations along the south ditch of the facility. Mr. Bill Hopkins of Techlaw and Mr. Juan Thomas of U.S. EPA, Region 5 were present for oversight on September 6 and 7, 2000. An oily seam was observed along the western bank of the Red Cedar River, immediately south of a platform dock near Area J. A concrete pipe opening was discovered extending from the western bank of the Red Cedar River below the present river water level. The pipe was observed to be releasing trace amounts of a hydrocarbon. The pipe entrance was packed with an oil-only absorbent boom. A second boom was stretched along the western bank of the Red Cedar River, immediately south of the dock.

PS Form 3800, April 1995

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J. Thomas DE-95

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MR. George Mileskiy
Director of Environment
Johnson Control, Inc
49200 Halyard Dr.
Plymouth, MI 48170

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P 140 779 267

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PS Form 3811, December 1994

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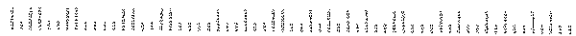


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Juan Thomas
U.S. EPA (DE-9J)
77 WEST JACKSON BLVD.
Chgo, IL 60604-3590

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

March 8, 2000

REPLY TO THE ATTENTION OF:

VIA FAX AND FIRST CLASS MAIL

DE-9J

Mr. George Mileskiy
Director of Environment
Johnson Controls, Inc.
49200 Halyard Drive
Plymouth, MI 48170

Mr. Michael Stoelton
Environmental Engineer
Johnson Controls, Inc.
49200 Halyard Drive
Plymouth, MI 48170

RE: Johnson Controls Facility, Fowlerville, MI
MID 099 124 299
Revised Phase III RCRA Facility Investigation (RFI)
Work Plan - Agency Review & Comments

Dear Mr. Mileskiy and Mr. Stoelton:

The United States Environmental Protection Agency ("U.S. EPA", "the Agency"), has completed its review of the Revised Phase III Resource Conservation and Recovery Act ("RCRA") Facility Investigation ("RFI") Work Plan for the Johnson Controls site in Fowlerville, Michigan (Dames & Moore, December 1999). The United States Environmental Protection Agency finds that the revisions made to the RFI Phase III Work Plan of December, 1999 are generally consistent with the Agency's comments raised in our letter of September 15, 1999 addressed to you. The U.S. EPA hereby approves the Revised RCRA RFI Phase III Work Plan contingent upon incorporating and implementing the following responses that are provided in the enclosed comments that pertain to either strategies as proposed in the Revised Phase III Work Plan or other relevant historical issues that the Agency believes should be addressed as part of the required planned investigatory activities to be conducted on-site.

We would anticipate that upon agreement with the modifications as discussed in the attached responses, you could begin implementation of this phase of the RFI process within 30 days of the date of this letter. As the new RCRA Corrective Action Project Manager, I am looking forward to

both an amicable and effective relationship with you and all principals involved or who might have subsequent involvement in this corrective action process. Should you need any assistance, please do not hesitate to call me at 312-886-6010 or via electronic mail at: thomas.juan@epa.gov.
Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read 'Juan Thomas', with a stylized flourish at the end.

Juan Thomas
Corrective Action Project Manager

cc: David Slayton, MDEQ
Michael Wagner, Dames & Moore

United States Environmental Protection Agency Comments and Responses to Resource Conservation and Recovery Act Revised Phase III Work Plan For the Johnson Controls, Inc. Facility, Fowlerville, Michigan.

Johnson Controls, Inc. comments referenced in bold and U.S.EPA comments and responses referenced in italics.

3.1 Objective 1 - Assessment of Current Groundwater Quality

page 5, paragraph 1

....In addition, other degradation products of TCE not previously detected during the Phase II RFI will be added to the target list of compounds. These include: 1,2-dichloroethane (DCA), 1,1- dichloroethene (DCE), and 1,1-DCA. Also, aromatic compounds ethylbenzene, toluene, and total xylenes will be added to the list of target compounds for sample locations in the vicinity of former kerosene tanks in Unit K.

From a historical perspective, since both Unit K and Unit L are both areas that previously were locations holding underground storage tanks, U.S. EPA is assuming that the area defined as the "vicinity" of Unit K includes Unit L. As such the additional aromatic compounds (BTEX) that are being added to the target compound list for Unit K should also be added to the target compound list for Unit L.

3.2 Objective 2 - TCE Source Identification

page 5, paragraph 1

....This initial work plan was prepared following the discovery of TCE and other volatile organic compounds (VOCs) in groundwater collected from a monitoring well located on the eastern (upgradient) portion of the former Stanley Tools property..

The sentence above should be modified to read... "several" monitoring "wells" located on the eastern (upgradient) portion of the former Stanley Tools property...Since other monitoring well locations specifically, MW K-1 in the eastern portion of the property as well as other locations in the southern portion of the facility property, MW-C1, MW-C3, and MW-B1 were also found to contain TCE and other VOCs, U.S. EPA request modification to the above statement.

3.2.2 Modified Scope of Work

page 8, paragraph 2

....As shown on Figure 3, groundwater samples will be collected on 25-foot centers near MW-L1, the southwestern corner of the former manufacturing facility, and the former chrome recovery unit (i.e., approximately 37 total grid sample points). The Geoprobe will be advanced to the water table and a groundwater sample collected.

At present the current proposed TCE Source investigation strategy indicates that only one deep groundwater monitoring well be investigated as part of the Phase III work. Since TCE can be considered a Dense Non-Aqueous Phase Liquid (DNAPL), the Agency believes that your strategy to sample to the water table with the intention of detecting the dissolved phase constituent, should be combined with a sampling strategy that has a greater probability of detecting TCE should it exist in non-aqueous phase. Therefore, U.S. EPA recommends that several deep wells be constructed in the vicinity of Unit L to enhance the potential for characterizing any migration of the DNAPL to the deeper zones of the aquifer. These deep wells should be constructed to a depth that reaches the near top of the confining layer.

3.3. Objective - Screening Level Evaluation

page 9, paragraph 2,

...Additional sediment samples will then be collected as part of the Phase III Work Plan activities. Approximately 15 sediment samples will be collected in order to duplicate the three sample locations indicating impact during the Phase II RFI and to further evaluate the impact...

Johnson Controls has proposed the collection of 15 sediment samples from the Red Cedar River as a part the Phase III RFI. This number of sample locations appear adequate to define the extent of contamination within the Red Cedar River. However, the Phase III WP does not define whether these samples will be limited to bottom sediment samples or whether river bank samples will also be collected. Historic sediment sampling included a limited number of river bank samples co-located with the bottom sediments which were important for comparative purposes. Therefore, as part of the Phase III RFI, Johnson Controls should include the collection of river bank sediment samples co-located with a limited number (three to five) of representative bottom sediment sampling locations. In addition, Johnson Controls may wish to collect sediment samples at depths other than the surface at a limited number of locations as with the river bank sediment samples.

5.1 Schedule

page 13,

Field Activities will require approximately 2 to 3 weeks to complete. Laboratory analyses for groundwater from boring samples, selected monitoring wells and sediment samples will require another 4 to 5 weeks....

Although the above proposes a general time frame for completion of the Phase III activities, no discussion is made as to when field activities would begin. This information should also be provided.

Other Issues and Concerns

Upon review of a past written correspondence (letter dated April 16, 1999) from representatives of Dames & Moore (Stuart Edwards) to George Mileskiy of Johnson Controls, Inc, and subsequently forwarded to U.S. EPA in a letter dated April 16, 1999 several areas of the site were mentioned as areas that would be further evaluated due to either high concentrations of certain constituents or to evaluate the effectiveness of some the interim remedial measures and the Buried Container Removal activities conducted on-site in 1994/1995. Specifically, cyanide (CN) was detected in shallow groundwater monitoring wells, C-1, C-3, K-1, B-1, F-5, J-1, and J-4. In addition, Area A was to be evaluated to check for "intrinsic remediation" of high benzene; monitoring wells F-2 and G-2 (deep wells) and Areas B and C were initially targeted to be sampled as a means of checking for improved conditions owing to interim remedial measures; Area J was to be evaluated for both VOC's and cyanide and Area E was to be evaluated for cyanide as well. As a way of more accurately characterizing the current site conditions on-site, the U.S. EPA suggest that your initial plans to include these areas as part of Johnson Controls' sampling plan remain included as a component to the Phase III RFI field activities to be conducted on-site.

Lastly, as a reminder, due to the nature of the historic and current/future activities at the Johnson Controls Fowlerville facility, Johnson Controls should provide a complete and comprehensive RFI Report upon acceptable completion of the RFI activities. It is noted that other historical sampling or remedial activities (Buried Container Removal) have been undertaken at the facility over the last several years, and these data should also be included in the RFI Report. In the interest of cost savings, Johnson Controls may wish to discuss the findings with U.S. EPA prior to completion of this report to ensure that the RFI has been completed to the satisfaction of both Johnson Controls and the U.S. EPA. Also, in the near future, or prior to completion of the RFI Report, Johnson Controls should provide an indication to U.S. EPA on their intended future uses/plans for the facility so that the most appropriate considerations (i.e., Risk Assessment, Michigan Part 201, etc.) can be taken into account when designing or planning for the next steps, which could include interim or corrective measures at the facility. Johnson Controls should also ensure that Michigan Department of Environmental Quality personnel are aware of these activities at the Fowlerville site. The United States Environmental Protection Agency proposes that the entire completed comprehensive report that incorporates the Interim Remedial Measures and Buried Container Removal Activities undertaken at the site be completed within 90 days of the date of this letter (June 7, 2000).



DAMES & MOORE

A DAMES & MOORE GROUP COMPANY

**REVISED
PHASE III RFI WORK PLAN**

**FORMER STANLEY TOOLS FACILITY
FOWLerville, MICHIGAN**

**PREPARED FOR: JOHNSON CONTROLS,
INC.**

**JOB NO: 20209-016-121
DECEMBER 3, 1999**

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URS Dames & Moore

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December 3, 1999

United States Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, IL 60604-3590

Attention: Mr. Juan Thomas
RCRA Corrective Action Manager

Gentlemen:

Re: Revised
Phase III RFI Work Plan
Former Stanley Tools Facility
Fowlerville, Michigan

At the request of Johnson Controls, Inc. (JCI), Dames & Moore prepared the following revised Phase III Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan (Task 3 - Addendum) for the former Stanley Tools (Stanley) manufacturing facility in Fowlerville, Michigan (Figure 1).

The Phase III RFI Work Plan was developed in response to a letter to JCI from the United States Environmental Protection Agency (U.S. EPA), Region V dated January 27, 1999. In the letter, JCI was requested to initiate a work plan received by the U.S. EPA on June 15, 1995 and approved July 11, 1995 to delineate a potential trichloroethene (TCE) plume in the southeast area of the site. In addition, the U.S. EPA requested JCI address several issues concerning current conditions at the site. JCI responded to the U.S. EPA in a letter dated April 16, 1999 addressing the U.S. EPA comments and committing to the preparation of this Phase III Work Plan.

The comments regarding the first submittal of the Phase III RFI Work Plan and the April 16, 1999 letter were provided from the United States Environmental Protection Agency, Region V. These comments are herein reprinted in bold type followed by responses in plain type.

U.S. EPA, Region 5
December 3, 1999
Page 2

If there are any questions regarding this submittal, please direct them to Mr. Michael Stoelton at JCI at (734) 254-5657.

Very truly yours,
DAMES & MOORE



Michael A. Wagner
Project Manager



Dennis P. Connair, C.P.G.
Associate

MAW/DPC:JCI(016)121
20209-016-121

cc: Mr. George Mileskiy, JCI
Mr. Michael Stoelton, JCI
Mr. Dennis Reis, Quarles & Brady LLP
Ms. Jackie Wetzspeon, The Stanley Works

**RESPONSE TO COMMENTS - SEPTEMBER 16, 1999
PHASE III RFI WORK PLAN**

General Issues

Due to the delay in completing RCRA Facility Investigation (RFI) activities, it may not be appropriate to use the formerly approved Quality Assurance Project Plan (QAPP) as it currently stands for all sampling which may be necessary to complete the RFI. It is noted that there is an approved QAPP in place; however, there have been several changes in the sampling and analytical requirements that may need to be further evaluated. For example, in the collection of either soils or sediments (e.g., solids), U.S. EPA Region 5 now requires the use of specific sampling equipment (Encore) or methods (Field preservation, EPA Method 5021 or 5035 preparation, etc.) in the collection and analysis of volatile organic constituent samples. Regardless of the status of the QAPP, many facilities with no gap in investigatory activities have been required to use these methods. At present, this type of activity has not currently been proposed for the Johnson Controls site, but rather presented for discussion purposes. If volatiles in soils will be sampled, we will need to discuss the matter of a QAPP Addendum. Moreover, Johnson Controls will need to submit a QAPP addendum to address the Geoprobe sampling proposed for Phase III.

JCI recognizes the agency's guidance to update the formally approved QAPP. Although no soil or sediment sampling for volatiles is planned for Phase III RFI activities, JCI anticipates amending the QAPP to address Geoprobe groundwater sampling and other methodology changes. Modification have been made to the Phase III RFI Work Plan and QAPP enclosed herein.

Specific Issues

Modified Scope of Work, Page 8

- The statements made in this section may be misleading. The discussion regarding sampling near solid waste management unit (SWMU) L infers that an offsite source may be responsible for the trichloroethene (TCE) contamination. While this is possible, due to the dynamics of the groundwater flow, this investigation may not support that conclusion either way. In addition, since TCE and other volatiles are in the groundwater in the vicinity of other SWMUs at the site, it may make it difficult to discern whether an offsite source is present, or whether it was due to site-wide operations. As a result, it may be more beneficial to define the extent of groundwater contamination upgradient, if applicable, so that this information could be used when identifying the need for interim measures, or when determining corrective measures for the site. This issue should be further discussed in our upcoming meeting.

As discussed in the October 27, 1999 meeting between JCI and Region 5, JCI is committed to evaluating the source and extent of impact so that an appropriate remedy can be identified.

*Off. QAPP w/ Brian Francis, does amended QAPP
Address proper Geoprobe methodology? What
are the other methodological changes made?*

*↓ B. Francis
sketches
VAP?
is OK.*

Accordingly, the enclosed revised Work Plan stipulates a flexible assessment approach so that this objective can be met. *... has not yet proposed to determine need of confirmatory investigation?* OK

- Based upon the suitability of the currently approved QAPP for this activity, the nature of the QC samples should be modified as follows. We suggest the ratio/frequency of field duplicates to environmental samples should be one in ten, not one in twenty. In addition, since the groundwater samples will be of an aqueous matrix and analyzed for VOCs, Johnson Controls should use trip blanks at a rate of one per cooler/shipping container sent to the laboratory.

As requested, modification to the Phase III RFI Work Plan were made to reflect these requirements regarding the ratio/frequency of field duplicates. *OK, add that Johnson Controls was not to be used... also that not to be used... (OA 77, 78, 79)*

- The statements in the second paragraph on page 9 indicate that the groundwater samples resulting from the Geoprobe borings and groundwater sampling will be transferred immediately to laboratory supplied containers and shipped to the laboratory for analysis. However, the second paragraph on page 6 states that the onsite laboratory originally planned for the TCE investigation will be replaced by onsite screening followed by offsite confirmatory sampling. These statements are somewhat contradictory and should be clarified. It is assumed that the "onsite screening" is simply borehole or "headspace" screening for general information and health and safety purposes, and that all samples will undergo off site analysis regardless of the results of the "onsite screening." Please clarify the proposed approach.

Onsite screening during the TCE investigation refers to the screening of soil removed from each borehole. *(what type of soil screening... what is the nature of this soil screening, what is the answer... that is expected from conducting a soil screening)? (see table of)* → (see 77, 78, 79)

- The method for decontamination of the polyethylene tubing used on the peristaltic pump is not discussed. While the equipment blank will be passed through the polyethylene tubing and peristaltic pump to check for cross-contamination, it is actually assumed that a new length of polyethylene tubing will be used for each sample location. Please clarify the procedures for preventing cross contamination of the peristaltic pump and associated tubing.

New polyethylene tubing will be used at each boring location. OK

Objective 3 – Screening Level Evaluation (Sediment)

- The proposed procedures for this activity are not currently considered adequate. While it is agreed that an Ecological Risk Assessment (ERA) will need to be performed, the use of the current data does not appear to be adequate. Additional data may need to be collected to better define the current environmental conditions of sediments in the Red Cedar River.

This may depend on the exact nature of the Screening Level ERA to be performed and the assurance that the appropriate ecological receptors are assessed in that endeavor. In addition, the use of current environmental data from other portions of the site which may affect an ERA will need to be completed prior to completing this analysis. We recommend discussing these specific needs during our upcoming meeting.

The intention of the Phase III RFI Work Plan scope of work, as it pertains to the ERA, is to identify potentially appropriate and relevant cleanup criteria against which existing data can be screened. Following this initial screening, JCI anticipates further evaluation of the current river conditions through collection of additional sediment data. The Phase III RFI Work Plan is modified to include evaluation of current river conditions through collection and analysis of additional sediment samples. *OK, sediment samples taken, but what was the relevant cleanup criteria value against which existing data was screened... for 201 ERA?*

Figure 2, Monitoring Well Locations

- The figure does a good job of representing the location of current monitoring wells and the relative position of the SWMUs or Areas of Concern. However, there are several omissions on the legend which make it difficult to determine the nature and purpose of some of the locations plotted on the figure. For example, the designators associated with OW-7, OW-8, OW-9S, MW-BCK3, MW-J3, MW-B4, MW-F5 and K-2 are not included on the legend. It is assumed that these refer to well depths, but this should be indicated on the figure. Revise the figure accordingly. *include well depths*

As requested, Figure 2 was modified in the enclosed Phase III RFI Work Plan. *OK, refer to legend drawing Figure 2*

April 16, 1999 letter (Dames & Moore to Johnson Controls, Inc.)

1. Johnson Controls also proposes significant modification to the TCE Source Identification Work Plan (TCE Work Plan). This would involve narrowing the focus of the borings and subsequent groundwater sampling into several areas near specific units as opposed to performing the grid-based sampling originally proposed in the TCE Work Plan. The end result of this modification would be the reduction in the total number of borings and subsequent groundwater samples from 70 to approximately half that number. This is not necessarily a problem, however we recommend that this be discussed in detail at the upcoming meeting to better define the scope and nature of this sampling event to ensure that all data gaps are filled. This would allow for a more clearly defined sampling strategy, unless Johnson Controls wishes to concede that the results of this limited sampling approach at the different SWMUs would be extrapolated to other areas which were not sampled, once it is time to evaluate appropriate interim or corrective measures. *b/c*

As identified in the above response to "Modified Scope of Work, Page 8", JCI is committed to evaluating the source and extent of impact so that an appropriate remedy can be identified. The enclosed revised Work Plan has been modified accordingly. *OK*

2. While the basis of Johnson Controls' response may be accurate, the specific nature of the current site conditions is not the primary issue of concern. The fact that the site has been largely untouched over the last five years means that the site conditions, and most specifically the impacts to offsite areas, as well as threats to human health and the environment have not been evaluated and likely have changed over that time period. It is understood that any deficiencies identified in the Phase II RFI Report have not been specifically communicated to Johnson Controls, however the U.S. EPA letter to Johnson Controls dated January 27, 1999, did address the issue of existing data gaps. It should be assumed that U.S. EPA's requests have been made as a result of any deficiencies noted in the Phase II RFI Report and from general knowledge and perception of the data gaps that need to be addressed following five years of inactivity.

In the past five years several remedial measures have been completed at the site:

- Interim Remedial Measure Implementation (IRM) (completed April 1995, reported June 1995). The IRM Work Plan called for the excavation and off-site disposal of sludge material in Units F, G, H, and I. Removal of sludge discovered while performing borings as part of the site investigation (RFI) was also added to the scope of work. The IRM Work Plan was transmitted to the U.S. EPA, Region V, on November 23, 1993 and approved on March 23, 1994.
- Buried Container Removal (BCR) (completed April 1995, reported July 1995). The BCR Plan called for the excavation of a suspected buried container area and removal and disposal of any containers encountered. Following approval of several plans (Health & Safety, Stormwater, Site Security, Dust Control, and Disposal), an excavation permit from the Livingston County Drainage Commission was received on November 4, 1994. *OK*

Given the past remedial measures, JCI has no reason to believe conditions have worsened and wishes to avoid full re-evaluation of the site. Consequently, JCI proposed a limited assessment to address prior data gaps and re-evaluate selected concerns on site. *response says re-evaluate... why? JCI proposed limited assessment... correct of and is this consistent with what we had written in our response?*

3. The response is only partially adequate. While Dames & Moore certainly has a more complete understanding of the geologic and hydrogeologic regimes in place at the Johnson Controls site, we question whether the statements made in the April 16, 1999 letter and the Phase III RFI Work Plan are fully accurate. If these statements are to be accepted, additional justification must be provided, instead of the generalities presented in the *(damaging)*

letter. For example, while it is likely true that the groundwater conditions have not worsened, the current status must be determined to ensure that the correct and required interim or corrective measures are planned or corrective measures are planned or enacted to protect human health and the environment. It is acceptable to define certain existing wells that may not warrant sampling, but this decision must be fully justified and agreed to by all parties. On this point, U.S. EPA is willing to reconsider the position stated in our January 27, 1999 letter.

The Work Plan has been modified to reflect sampling of those wells discussed in our meeting of October 27, 1999. *OK, the number of wells to be sampled... and see what work has been proposed*

In addition, while it is assumed that an upward vertical groundwater flow gradient has been observed, the general terminology (e.g., "most," "appear to vary," and "generally") are too vague to support the contention that several deep wells may not require sampling. At this time, it is more likely that the passage of time would mean that the deep wells should be sampled again so as to verify the lack of any hydraulic interconnection from the upper zones to the lower, and the subsequent downward migration of contamination. U.S. EPA requests that one deep well, at a minimum, be sampled to determine whether the deeper water bearing zone has been affected by contamination in the shallow or intermediate zones. *... what are some*

As discussed during the meeting on October 27, 1999, JCI has modified the Phase III RFI Work Plan to include the collection of groundwater quality information from one deep well. *... what are some*

Also, please provide an indication of the condition of the piezometers (MW-OS1, MW-OS2, and MW-OS3) west of the Red Cedar River. Specifically, state whether these wells are currently in an acceptable condition to yield water level measurements, at a minimum. If so, U.S. EPA believes it is warranted to collect this information, as well as groundwater quality information in the lower water bearing zones from the western side of the Red Cedar River. We are still concerned that the river may not serve as a hydrological barrier to groundwater flow in the intermediate or deep water bearing zones beneath the site. This could be accomplished with the installation of a single intermediate and/or deep wells, or a well cluster (rather than several three-well clusters as proposed in our January 27, 1999 letter).

As requested, JCI will inspect current conditions of piezometers MW-OS1, MW-OS2, and MW-OS3 and evaluate whether the integrity of the piezometers will suffice for the collection of groundwater samples from the west side of Red Cedar River. JCI is not convinced that the installation of additional wells west of the Red Cedar River is appropriate at this time. *the response*

does not state anything about whether the piezometers are of integrity to measure
shallow levels (hydraulic head, pressure, concentration of groundwater quality ... and groundwater quality
determinations. The answer is a definite "no" to the question.

4. The U.S EPA and Johnson Controls positions on this issue should be further discussed in the upcoming meeting to ensure that the necessary data are collected, and both parties are in agreement on the specific data needs and their use.

The referenced meeting was held October 27, 1999. Modifications to the enclosed Work Plan reflects the discussion and conclusions of that meeting.

5. The response to this issue is not adequate. Yes, an Ecological Risk Assessment will need to be performed, however the use of data greater than five years old does not appear to be appropriate. Additional data may need to be collected to be define the current environmental conditions of sediments in the Red Cedar River. This may depend on the exact nature of the Screening Level ERA to be performed and the assurance that the appropriate ecological receptors are assessed in that endeavor. In addition, the use of current environmental data from other portions of the site which may affect an ERA will need to be completed prior to completing this analysis. It is recommended that specific needs be further discussed in the upcoming meeting.

Please see the Response to Comment to "Objective 3 - Screening Level Evaluation (Sediment).

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FIGURES (follow text)

Number

- 1 SITE VICINITY
- 2 MONITORING WELL LOCATIONS
- 3 TCE INVESTIGATION
PROPOSED BORING LOCATIONS
- 4 RED CEDAR RIVER
PROPOSED SEDIMENT SAMPLING LOCATIONS
- 4A SOUTH DRAINAGE DITCH
PROPOSED SEDIMENT SAMPLING LOCATIONS

1.0 INTRODUCTION

At the request of Johnson Controls, Inc. (JCI), Dames & Moore prepared the following revised Phase III Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan (Task 3 - Addendum) for the former Stanley Tools (Stanley) manufacturing facility in Fowlerville, Michigan (Figure 1).

The Work Plan was developed in response to a letter to JCI from the United States Environmental Protection Agency (U.S. EPA), Region 5 dated January 27, 1999. In the letter, JCI was asked to initiate a work plan received by the U.S. EPA on June 15, 1995 and approved July 11, 1995 to delineate a potential trichloroethene (TCE) plume in the southeast area of the site. In addition, the U.S. EPA requested that JCI address several issues concerning current conditions at the site. JCI responded to the U.S. EPA in a letter dated April 16, 1999 addressing the U.S. EPA comments and committing to the preparation of a Phase III Work Plan.

The Phase III Work Plan was submitted to the U.S. EPA on July 23, 1999. Comments from the U.S. EPA were received on September 15, 1999 regarding the response letter dated April 16, 1999 in addition to the Phase III Work Plan. JCI responded to the comments on October 20, 1999 and met with the U.S. EPA on October 27, 1999 to discuss site status and the comments. The results of that meeting are reflected in the revised comment response transmitted with this Work Plan and in the content of the Plan.

The Phase III Work Plan follows the format set forth in the Administrative Order by Consent (Consent Order), U.S. EPA Docket No. V-W-88R-032, entered into by U.S. EPA and Stanley on September 6, 1988 for the former Stanley Tools facility (see Appendix A of the Phase II RFI [Task 10] report dated June 22, 1994). Where necessary, the Phase III Work Plan references the Task 3 Phase I and II RFI Strategy, Final Reports dated April 22, 1988 and October 8, 1993, and the Task 4 Quality Assurance and Quality Control Plan dated October 17, 1990. This format involves the following elements:

- Presentation of the background information relating to previous investigations at the facility
- Presentation of Phase III RFI objectives and proposed scope-of-work
- Proposed quality assurance and quality control (QA/QC) procedures as well as a data management plan

2.0 BACKGROUND

As documented in the Consent Order dated September 6, 1988, the following events or activities lead to the RFI:

- "On August 12, 1980, Stanley submitted a notification of hazardous waste activity at the facility as required by Section 3005(a) of RCRA, 42 U.S.C. §6930(a)."
- "On June 11, 1981, Stanley submitted to the U.S. EPA a RCRA Part A permit application as required by Section 3005(a) of RCRA, 42 U.S.C. §6925(a)." The application was accepted by the U.S. EPA (permit number MID 099 124 299).
- "On October 7, 1985, Stanley ceased adding waste to the (four) surface impoundments and began closure of the impoundments."

Prior to closure activities of the former surface impoundments, a Facility Management Plan was submitted to the U.S. EPA by the Michigan Department of Natural Resources (MDNR) on October 17, 1985 that included a Preliminary Assessment/Site Investigation of the facility. The data presented in the Facility Management Plan indicated that there were releases of hazardous constituents to the groundwater by seepage from the old settling ponds and chem-fixed areas.

As required by the RCRA Part A permit, a RFI Task 1 report entitled *Description of Current Conditions*, submitted to U.S. EPA on September 18, 1987, was prepared by Stanley to summarize the background information pertinent to the facility that had been gathered during the preceding years. Subsequently, a scope of work for a Phase I RFI was outlined in the *RFI Strategy Report* (Task 3), submitted to U.S. EPA on April 22, 1988.

Following review of the Task 1 and Task 3 reports by the U.S. EPA, the U.S. EPA and Stanley entered into the Consent Order for the former Stanley Tools facility (see Appendix A of the Phase II RFI). This Consent Order required Stanley to perform a RFI under the proposed scope of work within the Phase I Work Plan outlined in the *RFI Strategy Report* (Task 3).

The RFI was organized into 10 separate tasks, as documented in the Consent Order. Task 10 followed the plans set forth in Tasks 2 through 8 to conduct the Phase I RFI and prepare the draft Phase I report. In addition to the Phase I activities of Task 10, a Phase II Work Plan, including the results from the Phase I investigation, was required to be submitted, executed, and reported.

The Phase I RFI was conducted in the autumn of 1990 and spring of 1991; the results of the investigation were submitted to U.S. EPA in September 1991. The primary objectives of the Phase I investigation were to characterize the waste still present in some of the solid waste management units (SWMU) and to ascertain the presence or absence of contamination in the subsurface soils, groundwater, riverbank soils, river sediments, and surface water at the site.

The Phase II RFI was performed to further evaluate the nature and extent of environmental contamination associated with the various SWMUs at the former Stanley site. The scope of work for the Phase II RFI was outlined in the Phase II RFI Work Plan (Task 3) submitted to U.S. EPA on October 8, 1993 and amended on December 23, 1993. A Phase II RFI report (Task 10) was submitted June 22, 1994.

Following the submittal of the Phase II RFI report, several remedial measures were completed at the site. Interim Remedial Measure Implementation (IRM) involved the excavation and off-site disposal of sludge material in Units F, G, H, and I. The IRM scope was expanded to include removal of sludge discovered while performing borings as part of the site investigation (RFI). The IRM Work Plan was transmitted to the U.S. EPA, Region 5, on November 23, 1993 and approved on March 23, 1994. the IRM was completed in April 1995 and reported to the U.S. EPA in June 1995.

The Buried Container Removal (BCR) action involved the excavation of a suspected buried container area and removal and disposal of the containers encountered. Following approval of several plans (Health & Safety, Stormwater, Site Security, Dust Control, and Disposal), an excavation permit from the Livingston County Drainage Commission was received on November 4, 1994. The BCR was completed in April 1995 and reported to the U.S. EPA in July 1995.

The Phase III Work Plan (Task 3 - Addendum) addresses modification of the "TCE source identification" work plan and other requested work as discussed in the April 16, 1999 response letter. The scope of work covered by the work plan addresses three objectives:

- Assess the current groundwater quality by sampling select existing monitoring wells on site.
- Conduct a focused investigation of potential source areas for TCE impact by collecting groundwater samples by direct push methods.
- Conduct a screening level evaluation of ecological risk of previously identified sediment impact in the Red Cedar River. This includes the collection of additional sediment samples.

3.1 Objective 1 - Assessment Of Current Groundwater Quality

The U.S. EPA commented in its letter of January 27, 1999 that groundwater conditions may have changed in the 5 years since the Phase II was conducted. JCI responded in the letters dated April 16, 1999 and October 20, 1999 that conditions may well have improved considering the remedial actions taken, but that resampling of select monitoring wells would be conducted to evaluate that potential.

To establish current groundwater conditions at the former Stanley Tools property, JCI plans to sample a select number of existing monitoring wells on site as indicated on Figure 2. Wells to be sampled include:

- Wells MW-K1 and MW-L1 as part of the TCE investigation
- Area B wells (MW-B1, MW-B2, MW-B3, and MW-B4)
- Area C wells (MW-C1 and MW-C3)
- Area F wells (MW-F1, MW-F3, MW-F4, and MW-F5)
- Area G wells (MW-G1, MW-G3, and MW-G4)
- Area J wells (MW-J1, MW-J3, and MW-J4)

Groundwater samples will be collected and analyzed for the presence of target volatile organic compounds (VOCs) including: trichloroethene (TCE), cis-1,2-dichloroethene and trans-1,2-dichloroethene (DCE, total), vinyl chloride, and benzene. In addition, other

degradation products of TCE not previously detected during the Phase II RFI will be added to the target list of compounds. These include: 1,2-dichloroethane (DCA), 1,1-dichloroethene (DCE), and 1,1-DCA. [Also, aromatic compounds ethylbenzene, toluene, and total xylenes will be added to the list of target compounds for sample locations in the vicinity of former kerosene tanks in Unit K.] *and L former underground storage tank.*

Depth-to-water measurements will be collected from all existing wells and piezometers prior to sampling. Groundwater sampling and QA/QC protocols will be followed as established in the Phase II RFI Work Plan (Task 3) and Task 4 Quality Assurance and Quality Control Plan (amended December 3, 1999).

3.2 Objective 2 - TCE Source Identification

The need to test for a source area for the observed trichloroethene (TCE) impact was discussed fully with U.S. EPA, leading to the approved June 15, 1995 "TCE source identification" work plan. This initial work plan was prepared following the discovery of TCE and other volatile organic compounds (VOCs) in groundwater collected from *a several* monitoring well located on the eastern (upgradient) portion of the former Stanley Tools property, in the vicinity of solid waste management unit (Unit) L. The planned investigation involved advancing approximately 70 Geoprobe™ borings on grid spacing in an area roughly 180 feet by 350 feet with a series of optional offsite borings. Groundwater from the borings was to be tested for VOCs using an onsite gas chromatography laboratory.

Although the work plan was found to be acceptable by the agency, some efficiencies and economics can be derived by allowing flexibility to adjust boring locations and analytical techniques during execution of the plan. In particular, a more focused investigation of the potential hot spots may pinpoint the source area and better direct cleanup efforts. [Onsite laboratory services will be replaced by onsite soil screening with offsite analysis of sampled groundwater.] *-Chris is OK*

3.2.1 Background

As discussed in the Phase II RFI Report dated June 22, 1994, Unit L is the location of a former underground storage tank (Tank C). Tank C was a 1,000-gallon steel tank that was

originally used to store gasoline and later diesel fuel, which serviced plant vehicles¹. When removed by Stanley in 1986, the tank reportedly was intact and did not show any signs of leakage. The excavation was backfilled with sand.

During Phase II RFI field activities in February 1994, a groundwater sample was collected from monitoring well MW-L1 (located in the vicinity of Unit L) and analyzed for VOCs. Laboratory results indicated that TCE, 1,2-dichloroethene (total) (DCE), vinyl chloride, and benzene were detected in the sample at concentrations of 5,000 µg/L, 770 µg/L, 81 µg/L, and 0.78 µg/L, respectively. Groundwater data collected during the Phase II RFI is reported within the RFI report dated June 22, 1994.

The report that Tank C was used to store fuel suggests that an offsite source of VOCs should be considered. Dames & Moore conducted a preliminary survey of properties east and northeast (i.e., hydraulically upgradient) of MW-L1 to investigate this potential. The property address immediately east of the former Stanley Tools is 345 West Frank Street. At the time of the survey, this property was occupied by Wave Walker Company and the Fowlerville Industrial Mall. Businesses in this facility were apparently a long-distance marketing company and a gun shop.

Historical blueprints of the former Stanley Tools property from 1968 indicate that the facility immediately east of former Stanley Tools was once occupied by Commercial Brass Company. According to a 1982 blueprint, the property later was occupied by Livingston Machine Company. Dames & Moore conducted a database search of this property through Environmental Data Resources, Inc. (EDR). According to EDR, the property was not found in any of the environmental databases searched. According to the Fowlerville Tax Assessor's office, other former businesses include: Direct Process Labeling, Pyramid Products, and North American Chemical. The EDR report is presented within the Phase II RFI report dated June 22, 1994.

As documented in the Phase II RFI, an interview with a former Hoover and Stanley plant engineer, A. M. "Mike" Stock², revealed possible onsite sources for TCE. According to Mr. Stock, TCE was used at the plant in two capacities: for general cleaning and for parts degreasing. TCE was reportedly stored in 55-gallon drums and used to clean generators

¹ The Task 3 RFI Strategy (April 22, 1988) and Phase II RFI Report (June 22, 1994) state that Tank C stored No. 2 fuel oil. This was corrected by A.M. Stock, a former employee at the site, on August 27, 1994, who stated that the tank stored gasoline and diesel fuel.

² Interview conducted August 26-27, 1994.

located in the southwest corner of the manufacturing building. This practice was continued until the mid-1970s. In addition, chlorinated solvents were used to clean machine parts during maintenance operations, but Stanley does not have knowledge of where the maintenance actually took place. Mr. Stock also recalled a degreasing operation that used TCE to remove buffing compound prior to electroplating. During the early 1960s, the degreasing operation was located in the vicinity of the chromium recovery unit, which was installed in the mid-1970s. Mr. Stock believed that the degreasing operation ceased by 1965. Stanley was not able to confirm the use of TCE at the plant prior to 1961.

3.2.2 Modified Scope Of Work

Major modification
The TCE in groundwater at MW-L1 is suggestive of an upgradient release offsite to the east. A series of 11 or 12 borings to groundwater in the vicinity of MW-L1 will be used to determine whether concentrations of TCE increase in the upgradient or downgradient direction from Unit L (Figure 3). If concentrations increase to the east while decreasing to the west, then an offsite source is likely. Conversely, if concentrations decrease to the east and increase to the west, then an onsite source location is likely and will be pursued through additional testing as necessary. Potential complications rising from degradation of the contamination will also be taken into account in the evaluation of upgradient verses onsite contaminant sources.

Groundwater samples from existing wells MW-L1 and MW-K1 will be collected as part of Objective 1 for comparison with analytical data obtained during the Phase II RFI. The samples will be collected following the procedures outlined in the RFI Work Plan dated October 8, 1993 (amended December 23, 1993 and approved February 2, 1994) which include the use of dedicated Teflon® bailers to purge and sample each well. Samples will be submitted under chain of custody to Quanterra Environmental Services (formerly ENSECO-Rocky Mountain Analytical Laboratories) in Arvada, Colorado for analysis of VOCs per SW-846 Method 8260.

In the vicinity of Unit K, TCE concentrations are somewhat lower but can be investigated in a similar manner using groundwater samples from borings to evaluate in which direction concentrations increase and decrease. For this task, approximately 7 to 10 borings will be used. Another ten borings will be used to evaluate nearby area of concern (AOC) 1, which is a potential site of degreasing operations in the vicinity of Unit J. Five borings will be

advanced at evenly spaced intervals in the area between Unit L to the east and Unit K and AOC 1 to the west. Boring locations are illustrated on Figure 3.

The groundwater samples will be collected using a mobile Geoprobe™ sampling tool at locations near MW-L1, and within the area of the former manufacturing facility. As shown on Figure 3, groundwater samples will be collected on 25-foot centers near MW-L1, the southwest corner of the former manufacturing facility, and the former chrome recovery unit (i.e., approximately 37 total grid sample points). The Geoprobe™ will be advanced to the water table and a groundwater sample collected. The groundwater sample will be immediately transferred to laboratory supplied containers and transported via next day delivery to the laboratory. The groundwater samples will be analyze for the presence of target VOCs including: TCE, 1,2-DCE (total), vinyl chloride, and benzene. In addition, other degradation products of TCE not previously detected during the Phase II RFI will also be added to the target list of compounds. These include: 1,2-dichloroethane (DCA), 1,1-dichloroethene (DCE), and 1,1-DCA. Also, aromatic compounds ethylbenzene, toluene, and total xylenes will be added to the list of target compounds for sample locations in the vicinity of former kerosene tanks in Unit K.

→ is this deeper?

[L should also be added for these additional target compounds]

A van-mounted hydraulic hammer will drive the Geoprobe™, which consists of 2-foot lengths of 1.0-inch inside-diameter (ID) threaded steel pipes with an internal, acetate-lined, removable soil sampling device. Continuous soil samples will be collected at each boring location, screened with a photoionization detection device, and recorded on a boring log. Once the shallow groundwater table is reached, the internal soil sampling device will be withdrawn to create an annular space from which to collect a groundwater sample. A new section of polyethylene tubing will be inserted through the probe into the water. The aboveground end of the tubing will then be connected to a peristaltic pump, and a vacuum applied to extract a groundwater sample. The vacuum will be pulled until the water reaches the pump. At this time, the pump will be turned off, the tubing disconnected from the pump, and the water in the tubing drained into a 40-milliliter (mL) glass vial sealed with a Teflon®-lined septum screw cap. The samples will be shipped at the end of each day, following the QA/QC Plan chain of custody protocol, by over-night courier to the laboratory for VOC analysis.

For QA/QC objectives, various QA/QC samples will also be collected and analyzed. These include: one blind duplicate sample for every 10 samples collected as to check on

laboratory quality and an equipment blank sample of deionized water passed through the polyethylene tubing and peristaltic pump to check for cross-contamination.

All downhole drilling equipment will be steam cleaned prior to use. The Geoprobe™ and all downhole equipment will be decontaminated between sample locations by a deionized water rinse, potable water and Alconox® solution wash, followed by a deionized water rinse. Based on the sampling method selected, soil cuttings are not anticipated to be accumulated during drilling. However, left-over soil samples will be drummed for temporary storage at the site prior to disposal. [Containerized soil and purge/decontamination water will be handled per the management plan for containerized soil and water presented in Appendix B of the approved Phase II RFI Work Plan.] - IDW

All grid borings will be staked and surveyed for location in accordance with the approved RFI Work Plan.

3.3 Objective 3 - Screening Level Evaluation (Sediment)

The Phase II RFI dated June 22, 1994 concluded that the sediment of Red Cedar River and the South Drainage Ditch were impacted by low levels of PCBs, cyanide, and PAHs within 1,300 feet of the site. The significance these results with respect to ecological risk will be evaluated through a screening level risk assessment prior to planning or conducting additional investigation. This assessment will involve a screening level comparison of detected concentrations to Region 5 Ecological Data Quality Levels (EDQLs) concerning sediment chemistry of wadable streams, biological effects of chemical concentrations in aquatic sediments, and surface water quality assessments.

5?
see
Figure 4A
Additional sediment samples will then be collected as part of Phase III RFI Work Plan activities. Approximately 15 sediment samples will be collected in order to duplicate the three sample locations indicating impact during the Phase II RFI and to further evaluate the extent of impact. The proposed sediment sample locations (approximate) are indicated on Figures 4 and 4A. Prior to sampling the sediment, a walking survey of the river and drainage ditches will be made to identify the locations of sediment deposits in order to properly place the sampling locations.

[Each sediment sample collected will be analyzed for RCRA metals, PCB's, cyanide, and PAHs.] Sampling of the sediment will follow the same protocol as discussed in the Phase

II RFI Work Plan (Task 3) and Task 4 Quality Assurance and Quality Control Plan (amended December 3, 1999). The results from the additional sediment samples will also be evaluated through a screening level risk assessment (using Region 5 screening EDQLs) concerning sediment chemistry of wadable streams, biological effects of chemical concentrations in aquatic sediments, and surface water quality assessments.

4.0 QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

Quality assurance and quality control objectives for the laboratory are described within the *Task 4: Quality Assurance/Quality Control Plan* dated October 17, 1990 and the *Addendum to Task 4* dated December 3, 1999. All data packages provided by the laboratory will be reviewed for compliance with Task 4 and Addendum.

5.0 DATA MANAGEMENT PLAN

Data management objectives will follow the Data Management Plan described within the *Task 4: Quality Assurance/Quality Control Plan* dated October 17, 1990. The work activities, as described above, and their management will be conducted by the Cincinnati office of Dames & Moore on behalf of JCI. The overall management approach to satisfy the RFI includes the designation of qualified personnel and comprehensive project tracking.

JCI personnel designated for the Phase III RFI project include:

- Mr. Mike Stoelton - Environmental Engineer

Mr. Mike Stoelton will be the JCI contact. He will be responsible for ensuring that the Phase III RFI is implemented and completed in accordance with the approved Work Plan.

Dames & Moore personnel designated for this project are:

Mr. Dennis P. Connair - Project Director

Mr. Michael A. Wagner - Project Manager and
Field Activities Director

A brief description of their responsibilities and qualifications is presented below.

Dennis P. Connair, C.P.G., an Associate with Dames & Moore, will provide overall technical direction for the investigation and will be the primary point of contact with the regulatory agency. Mr. Connair has 12 years of experience with Dames & Moore including extensive work in glacial terrain. Mr. Connair will be responsible for committing the necessary staffing and subcontracted resources to complete the project.

Michael A. Wagner, project geologist, will serve as the project manager and field activities director. Mr. Wagner has been with Dames & Moore for 9 years. He will monitor the budget, and will schedule and coordinate personnel to accomplish required tasks for the project. Mr. Wagner will also coordinate and manage field activities. He will also be responsible for the final Phase III RFI report.

In addition to the above mentioned personnel, Dames & Moore has a large staff of environmental scientists, geologists, hydrogeologists, and engineers to support the needs

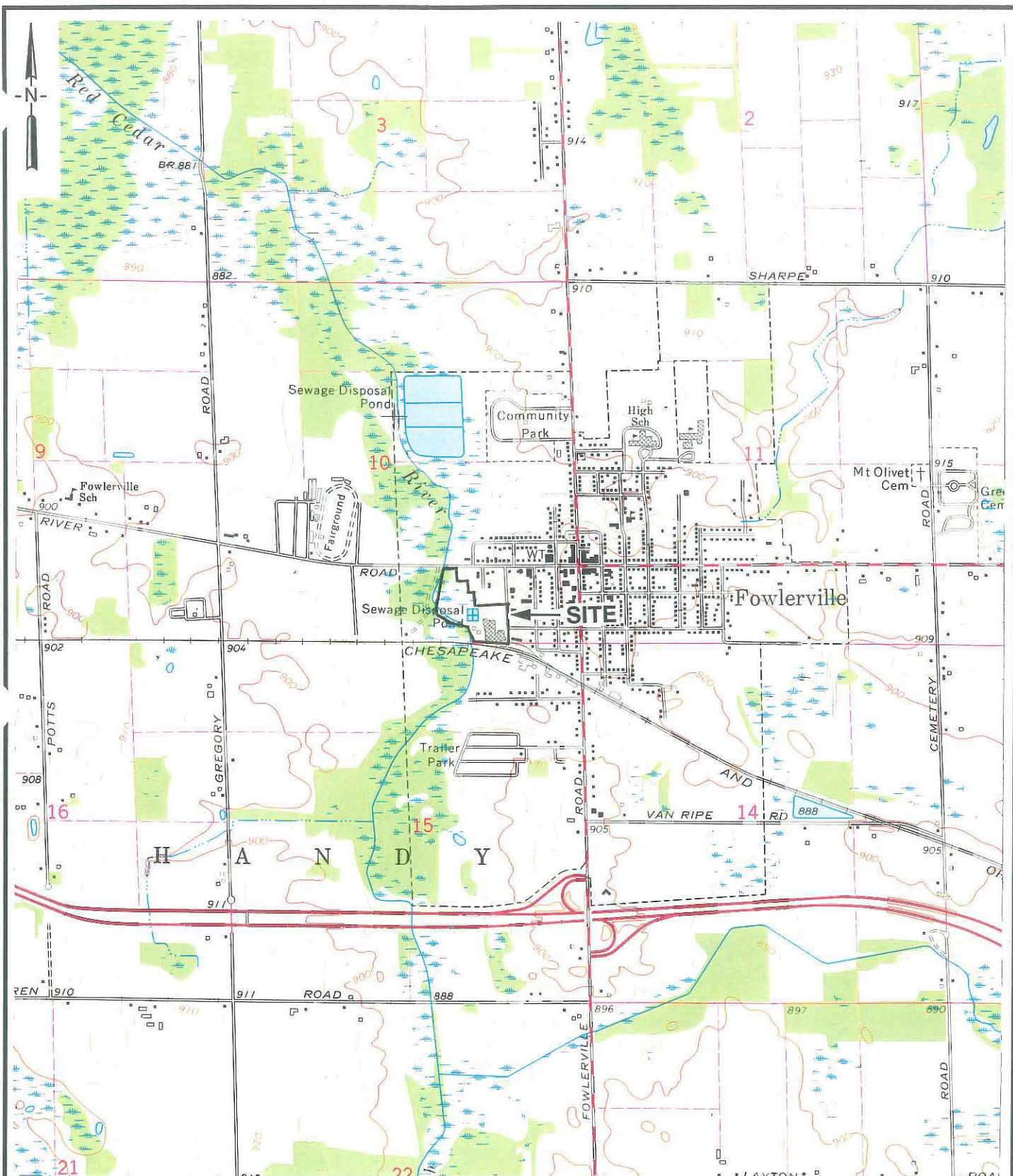
of this project, as directed by the project director. Dames & Moore also maintains a large support staff of typists and technical illustrators experienced in the production of documents for regulatory submission.

5.1 SCHEDULE

Field activities will require approximately 2 to 3 weeks to complete. Laboratory analyses for groundwater from boring samples, selected monitoring wells, and sediment samples will require another 4 to 5 weeks. Upon receipt of these analyses, a draft Phase III RFI report will be prepared. The report will include a discussion of the investigative procedures, sample analytical results, QA/QC, a discussion of the possible source(s) of TCE in the vicinity of MW-L1 and the former manufacturing facility, and a screening level evaluation of the sediment samples collected during the Phase II RFI.

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JOHNSON CONT.



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SCALE IN FEET



MI
Quadrangle
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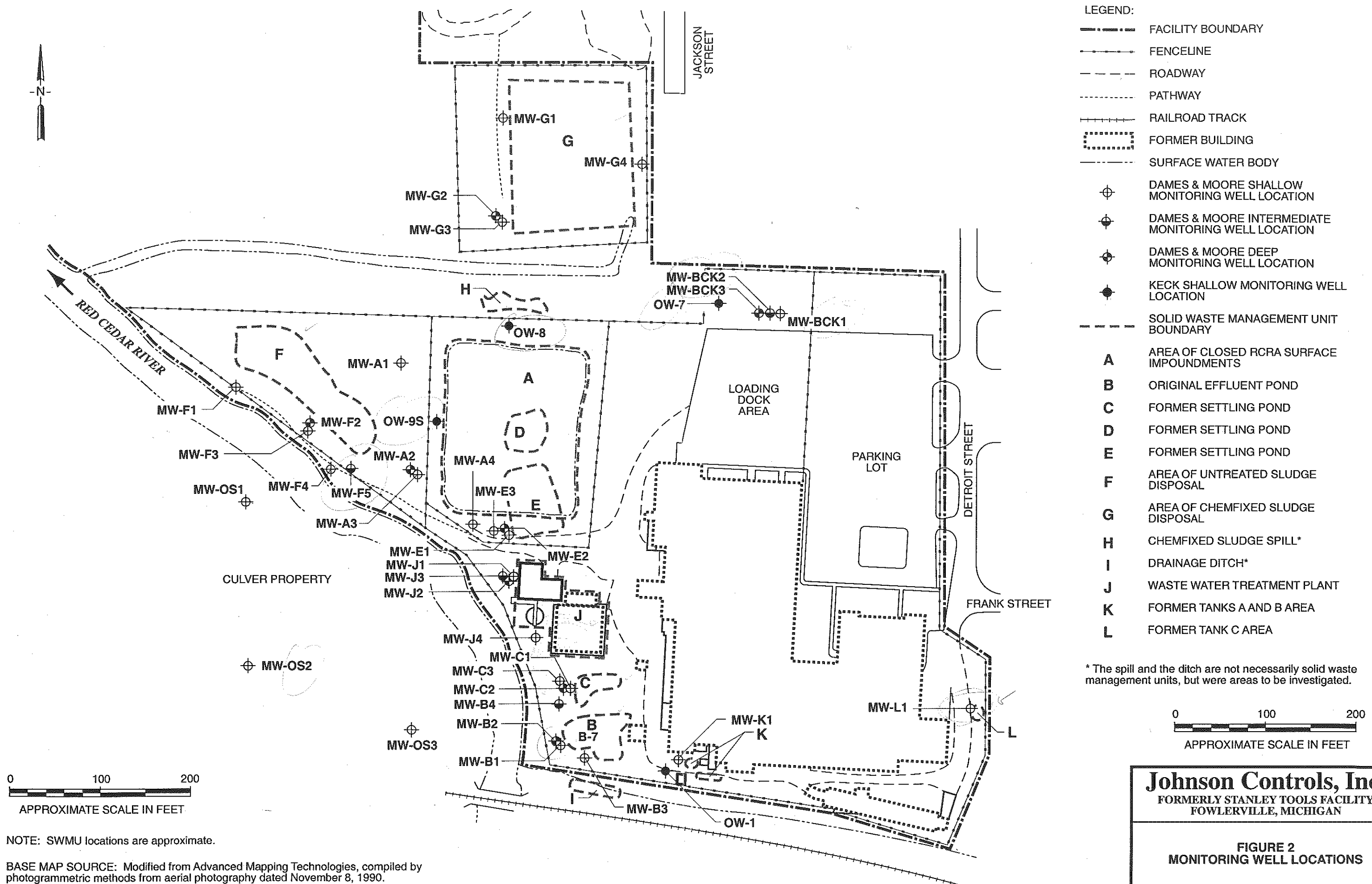
BASE MAP SOURCE: USGS 7 1/2 minute
topographic quadrangle map: Fowlerville,
Michigan 1973.

Johnson Controls, Inc.
FORMERLY STANLEY TOOLS FACILITY
FOWLerville, MICHIGAN

**FIGURE 1
SITE VICINITY MAP**

JOB NO. 20209-016-121

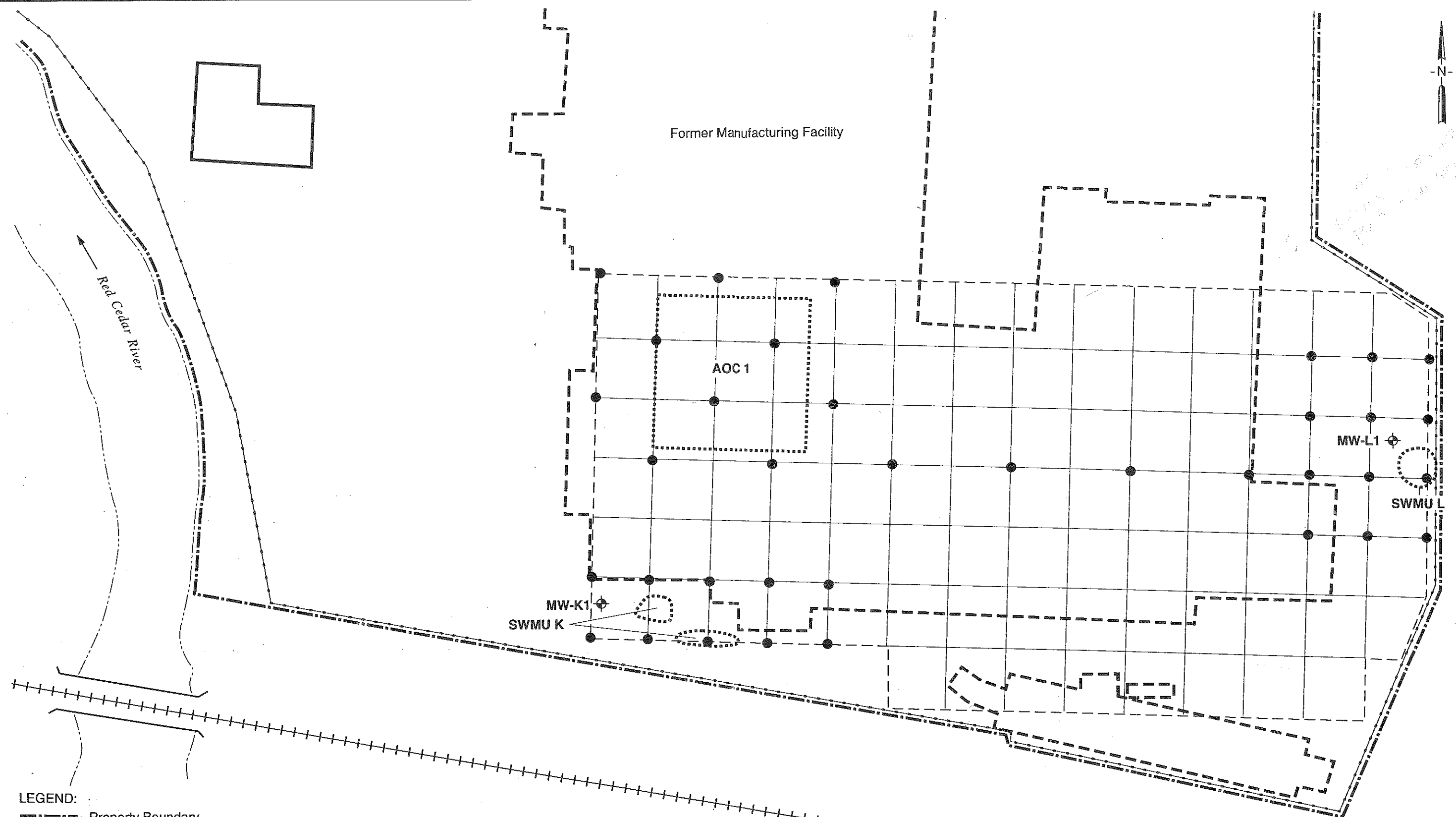
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FOWLerville, MICHIGAN

FIGURE 2
MONITORING WELL LOCATIONS

2016-0101-121
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- LEGEND:
- Property Boundary
 - Fence Line
 - Railroad Tracks
 - Former Building Location
 - Limits of Survey
 - Existing Building Location

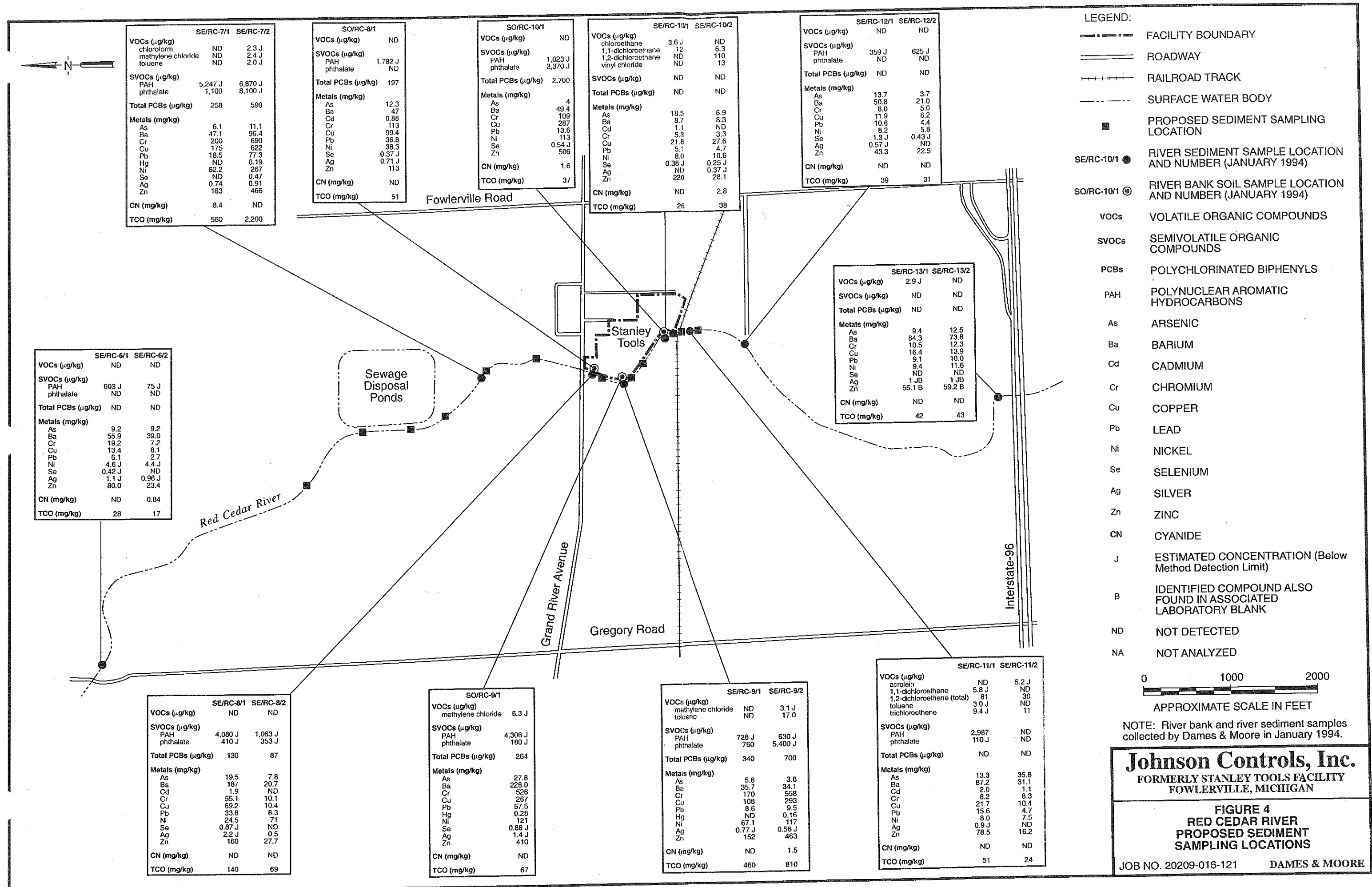
- Solid Waste Management Unit/Area Of Concern Location
- Survey Grid
- Sample Location
- MW-K1 Monitoring Well Location and Number

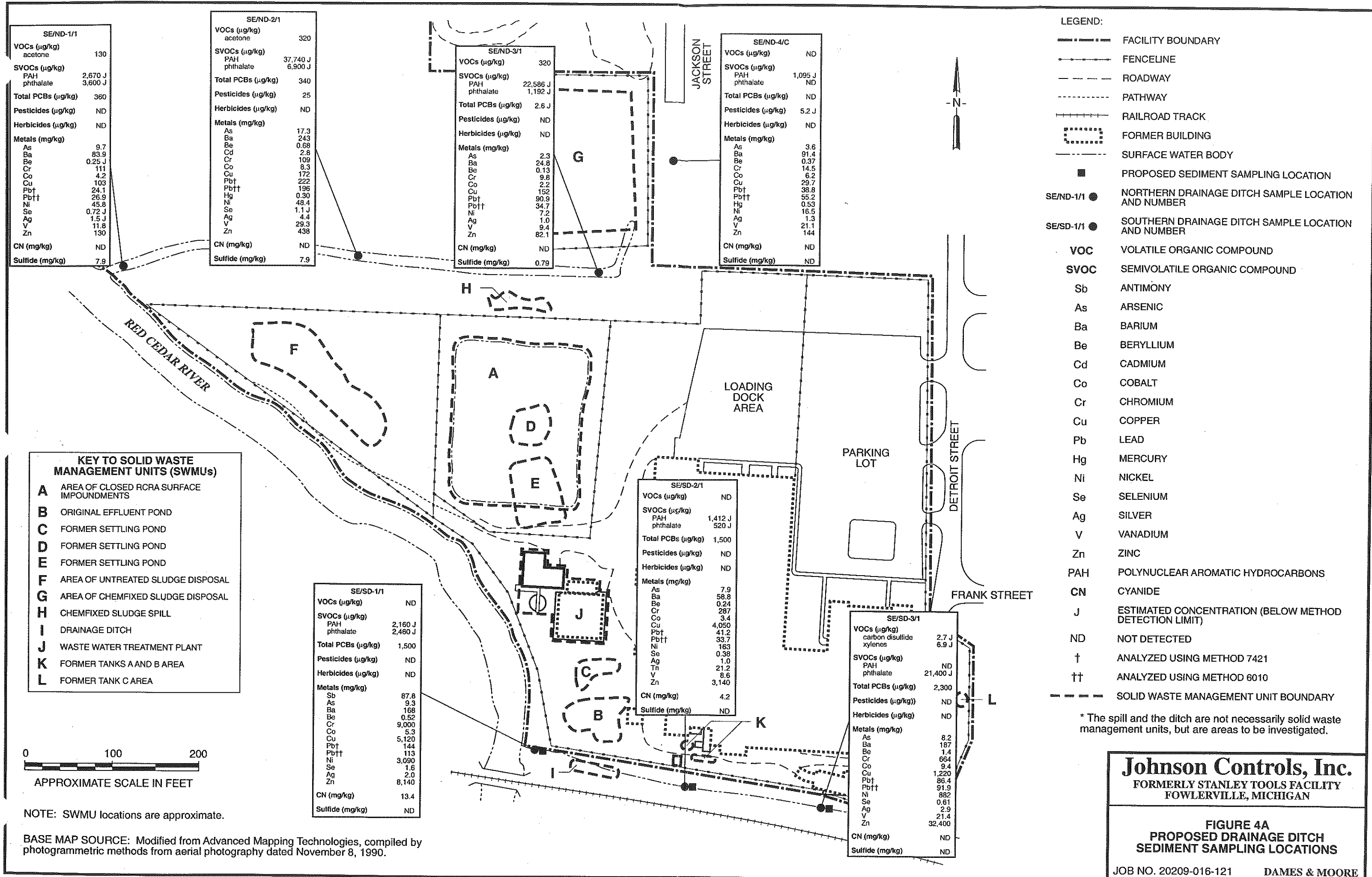
0 40 80
APPROXIMATE SCALE IN FEET

BASE MAP SOURCE: Modified from Advanced Mapping Technologies compiled by photogrammetric methods from aerial photograph dated November 8, 1990.

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FOWLerville, MICHIGAN

FIGURE 3
TCE SOURCE IDENTIFICATION







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PHASE III RFI WORK PLAN

**FORMER STANLEY TOOLS FACILITY
FOWLerville, MICHIGAN**

**PREPARED FOR: JOHNSON CONTROLS,
INC.**

**JOB NO: 20209-016-121
JUNE 25, 1999**

644 Linn Street, Suite 501
Cincinnati, Ohio 45203
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Fax (513) 651-3452



DAMES & MOORE

A DAMES & MOORE GROUP COMPANY

644 Linn Street, Suite 501
Cincinnati, Ohio 45203
513 651 3440 Tel
513 651 3452 Fax

June 25, 1999

Johnson Controls, Inc.
36121 Schoolcraft
Livonia, MI 48150

Attention: Mr. Mike Stoelton

Gentlemen:

Re: Phase III RFI Work Plan
Former Stanley Tools Facility
Fowlerville, Michigan

INTRODUCTION

At the request of Johnson Controls, Inc. (JCI), Dames & Moore prepared the following Phase III Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan (Task 3 - Addendum) for the former Stanley Tools (Stanley) manufacturing facility in Fowlerville, Michigan (Figure 1).

The Work Plan was developed in response to a letter to JCI from the United States Environmental Protection Agency (U.S. EPA), Region V dated January 27, 1999. In the letter, JCI was requested to initiate a work plan received by the U.S. EPA on June 15, 1995 and approved July 11, 1995 to delineate a potential trichloroethene (TCE) plume in the southeast area of the site. In addition, the U.S. EPA requested JCI address several issues concerning current conditions at the site. JCI responded to the U.S. EPA in a letter dated April 16, 1999 addressing the U.S. EPA comments and committing to the preparation of this Phase III Work Plan. Comments from the U.S. EPA have not been received regarding the response letter dated April 16, 1999.

The Phase III Work Plan follows the format set forth in the Administrative Order by Consent (Consent Order), U.S. EPA Docket No. V-W-88R-032, entered into by U.S. EPA and Stanley on September 6, 1988 for the former Stanley Tools facility (see



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Appendix A of the Phase II RFI (Task 10) report dated June 22, 1994). Where necessary, the Work Plan references the Task 3 RFI Strategy, Final Report dated April 22, 1988 and the Task 4 Quality Assurance and Quality Control Plan dated October 17, 1990. This format involves the following elements:

- Presentation of the background information relating to previous investigations at the facility
- Presentation of Phase III RFI objectives and proposed scope-of-work
- Proposed quality assurance and quality control (QA/QC) procedures as well as a data management plan

BACKGROUND

As documented in the Consent Order dated September 6, 1988, the following are events or activities which lead to the RFI:

- "On August 12, 1980, Stanley submitted a notification of hazardous waste activity at the facility as required by Section 3005(a) of RCRA, 42 U.S.C. §6930(a)."
- "On June 11, 1981, Stanley submitted to the U.S. EPA a RCRA Part A permit application as required by Section 3005(a) of RCRA, 42 U.S.C. §6925(a)." The application was accepted by the U.S. EPA (permit number MID 099 124 299).
- "On October 7, 1985, Stanley ceased adding waste to the (four) surface impoundments and began closure of the impoundments."

Prior to closure activities of the former surface impoundments, a Facility Management Plan was submitted to the U.S. EPA by the Michigan Department of Natural Resources (MDNR) on October 17, 1985 that included a Preliminary Assessment/Site Investigation of the facility. The data presented in the Facility Management Plan indicated that there were



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releases of hazardous constituents to the groundwater by seepage from the old settling ponds and chem-fixed areas.

As required by the RCRA Part A permit, a RFI Task 1 report entitled *Description of Current Conditions*, submitted to U.S. EPA on September 18, 1987, was prepared by Stanley to summarize the background information pertinent to the facility that had been gathered during the preceding years. Subsequently, a scope of work for a Phase I RFI was outlined in the *RFI Strategy Report* (Task 3), submitted to U.S. EPA on April 22, 1988.

Following review of the Task 1 and Task 3 reports by the U.S. EPA, the U.S. EPA and Stanley entered into the Consent Order for the former Stanley Tools facility (see Appendix A of the Phase II RFI). This Consent Order required Stanley to perform a RFI under the proposed scope of work within the Phase I Work Plan outlined in the *RFI Strategy Report* (Task 3).

The RFI was organized into 10 separate tasks, as documented in the Consent Order. Task 10 followed the plans set forth in Tasks 2 through 8 to conduct the Phase I RFI and prepare the draft Phase I report. In addition to the Phase I activities of Task 10, a Phase II Work Plan, including the results from the Phase I investigation, was required to be submitted, executed, and reported.

The Phase I RFI was conducted in the autumn of 1990 and spring of 1991; the results of the investigation were submitted to U.S. EPA in September 1991. The primary objectives of the Phase I investigation were to characterize the waste still present in some of the solid waste management units (SWMU) and to ascertain the presence or absence of contamination in the subsurface soils, ground water, riverbank soils, river sediments, and surface water at the site.

The Phase II RFI was performed to further evaluate the nature and extent of environmental contamination associated with the various SWMUs at the former Stanley site. The scope of work for the Phase II RFI was outlined in the Phase II RFI Work Plan (Task 3) submitted



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to U.S. EPA on October 8, 1993 and amended on December 23, 1993. A Phase II RFI report (Task 10) was submitted June 22, 1994.

PHASE III - SCOPE OF WORK

The Phase III Work Plan (Task 3 - Addendum) addresses modification of the "TCE source identification" work plan and other requested work as discussed in the April 16, 1999 response letter. The scope of work covered by the work plan addresses three objectives:

- Assess the current groundwater quality by sampling select existing monitoring wells on site.
- Conduct a focused investigation of potential source areas for TCE impact by collecting groundwater samples by direct push methods.
- Conduct a screening level evaluation of ecological risk of previously identified sediment impact in the Red Cedar River.

OBJECTIVE 1 - Assessment Of Current Groundwater Quality

The U.S. EPA commented in its letter of January 27, 1999 that groundwater conditions may have changed in the 5 years since the Phase II was conducted. JCI responded in the letter dated April 16, 1999 that conditions are more likely to have improved considering the remedial actions taken. However, resampling of select monitoring wells may be useful to verify the RFI findings and to evaluate the effect of remedial measures taken to date.

To establish current groundwater conditions at the former Stanley Tools property, JCI proposes to sample a select number of existing monitoring wells on site as indicated on Figure 2. Wells to be sampled include:

- Wells MW-K1 and MW-L1 as part of the TCE investigation
- Area B wells (MW-B1, MW-B3, and MW-B4)
- Area C wells (MW-C1 and MW-C3)



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- Area F wells (MW-F1, MW-F3, MW-F4, and MW-F5)
- Area G wells (MW-G1, MW-G3, and MW-G4)
- Area J wells (MW-J1, MW-J3, and MW-J4)

Most of the deep monitoring wells indicated no influence from surface impact and will not be sampled as part of this Phase III Work Plan. Based on groundwater elevation measurements collected on November 16, 1990 and April 23, 1994, an upward vertical groundwater flow gradient is present at monitoring well clusters A, B, F, and G. The vertical flow gradient appears to vary at clusters C, J, and E, but it appears that bedrock monitoring wells MW-B2, MW-F2, and MW-G2 do not warrant resampling.

Groundwater samples will be collected and analyzed for the presence of target volatile organic compounds (VOCs) including: trichloroethene (TCE), 1,2-dichloroethene (DCE, total), vinyl chloride, and benzene. In addition, other biodegradation products of TCE not previously detected during the Phase II RFI will be added to the target list of compounds. These include: 1,2-dichloroethane (DCA), 1,1-dichloroethene (DCE), and 1,1-DCA. Also, aromatic compounds ethylbenzene, toluene, and total xylenes will be added to the list of target compounds for sample locations in the vicinity of former kerosene tanks in Unit K.

Depth-to-water levels will be collected from all existing wells and piezometers prior to sampling. Groundwater sampling and QA/QC protocols will be followed as established in the Phase II RFI Work Plan (Task 3) and Task 4 Quality Assurance and Quality Control Plan.

Objective 2 - TCE Source Identification

As discussed in our letter dated April 16, 1999, the need to test for a source area for the observed trichloroethene (TCE) impact was discussed fully, resulting in the approved June 15, 1995 "TCE source identification" work plan. This initial work plan was prepared following the discovery of TCE and other volatile organic compounds (VOCs) in groundwater collected from a monitoring well located on the eastern (upgradient) portion of



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the former Stanley Tools property, in the vicinity of solid waste management unit (Unit) L. The planned investigation involved advancing approximately 70 Geoprobe borings on grid spacing in an area roughly 180 feet by 350 feet with a series of optional offsite borings. Groundwater from the borings was to be tested for VOCs using an onsite gas chromatography laboratory.

Although the work plan was found to be acceptable by the agency, some efficiencies and economics can be derived by allowing flexibility to adjust boring locations and analytical techniques during execution of the plan. In particular, a more focused investigation of the potential hot spots may pinpoint the source area and better direct cleanup efforts. Onsite laboratory services will be replaced by onsite screening followed by offsite confirmatory analysis.

Background

As discussed in the Phase II RFI Report dated June 22, 1994, Unit L is an area around a former underground storage tank (Tank C). Tank C was a 1,000-gallon steel tank that was originally used to store gasoline and later diesel fuel, which serviced plant vehicles¹. When removed by Stanley in 1986, the tank reportedly was intact and did not show any signs of leakage. The excavation was backfilled with sand.

During Phase II RFI field activities in February 1994, a groundwater sample was collected from monitoring well MW-L1, which is located in the vicinity of Unit L, and analyzed for VOCs. Laboratory results indicated that TCE, 1,2-dichloroethene (total) (DCE), vinyl chloride, and benzene were detected in a groundwater sample at concentrations of 5,000 µg/L, 770 µg/L, 81 µg/L, and 0.78 µg/L, respectively. Groundwater data collected during the Phase II RFI can be located within the RFI report dated June 22, 1994.

¹ The Task 3 RFI Strategy (April 22, 1988) and Phase II RFI Report (June 22, 1994) state that Tank C stored No. 2 fuel oil. This was corrected by A.M. Stock, a former employee at the site, on August 27, 1994, who stated that the tank stored gasoline and diesel fuel.



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Based on information available at the time, a possible offsite source of VOCs was originally suspected because the source of the VOCs detected in groundwater from MW-L1 was reportedly not related to Tank C. Dames & Moore conducted a preliminary survey of properties east and northeast (i.e., hydraulically upgradient) of the former Stanley Tools property. The property address immediately east of the former Stanley Tools is 345 West Frank Street. At the time of the survey, this property was occupied by Wave Walker Company and the Fowlerville Industrial Mall. Businesses in this facility were apparently a long-distance marketing company and a gun shop.

In addition, historical blueprints of the former Stanley Tools property from 1968 indicate that the facility immediately east of former Stanley Tools was once occupied by Commercial Brass Company. According to a 1982 blueprint, the property later was occupied by Livingston Machine Company. Dames & Moore conducted a database search of this property through Environmental Data Resources, Inc. (EDR). According to EDR, the property was not found in any of the environmental databases searched. According to the Fowlerville Tax Assessor's office, other former businesses include: Direct Process Labeling, Pyramid Products, and North American Chemical. The EDR report can be located within the Phase II RFI report dated June 22, 1994.

As documented in the Phase II RFI, an interview with a former Hoover and Stanley plant engineer, A. M. "Mike" Stock², revealed possible onsite sources for TCE. According to Mr. Stock, TCE was used at the plant in two capacities: for general cleaning and parts degreasing. TCE was reportedly stored in 55-gallon drums and used to clean generators located in the southwest corner of the manufacturing building. This practice was continued until the mid-1970s. In addition, chlorinated solvents were used to clean machine parts during maintenance operations, but Stanley does not have knowledge of where the maintenance actually took place. Mr. Stock also recalled a degreasing operation that used TCE to remove buffing compound prior to electroplating. During the early 1960s, the degreasing operation was located in the vicinity of the chromium recovery unit, which was

²Interview conducted August 26-27, 1994.



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installed in the mid-1970s. Mr. Stock believed that the degreasing operation ceased by 1965. Stanley has not confirmed the use of TCE at the plant prior to 1961.

Modified Scope Of Work

The TCE in groundwater at MW-L1 is suggestive of an upgradient release offsite to the east. A series of 11 or 12 borings to groundwater in the vicinity of MW-L1 will be used to determine whether concentrations of TCE increase in the upgradient or downgradient direction from SWMU L (Figure 3). If concentrations increase to the east while decreasing to the west, then an offsite source is likely. Conversely, if concentrations decrease to the east and increase to the west, then an onsite source location is likely and will be pursued through additional testing as necessary. Potential complication rising from degradation of the contamination will also be taken into account in the evaluation of upgradient verses onsite contaminant sources.

*offsite source
likely
downgradient
degradation
likely
likely*

Initially, groundwater samples from existing wells MW-L1 and MW-K1 will be collected as part of Objective 1 for comparison with analytical data obtained during the Phase II RFI. These wells were selected because they are located near the source areas reported by Mr. Stock. The samples will be collected following the procedures outlined in the RFI Work Plan dated October 8, 1993 (amended December 23, 1993 and approved February 2, 1994) which include the use of dedicated Teflon® bailers to purge and sample each well. Samples will be submitted under chain of custody to Quanterra Environmental Services (formerly ENSECO-Rocky Mountain Analytical Laboratories) in Arvada, Colorado for analysis of VOCs per SW-846 Method 8260.

In the vicinity of SWMU K, TCE concentrations are relatively low but can be investigated in a similar manner using groundwater samples from borings to evaluate in which direction concentrations increase and decrease. For this task, approximately 7 to 10 borings will be used. Another ten borings will be used to evaluate nearby area of concern (AOC) 1, which is a potential site of degreasing operations in the vicinity of SWMU J. Five borings will be



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advanced at evenly spaced intervals in the area between SWMU L to the east and SWMU K and AOC 1 to the west. Boring locations are illustrated on Figure 3.

The groundwater samples will be collected using a mobile Geoprobe™ sampling tool at locations near MW-L1, and within the area of the former manufacturing facility. As shown on Figure 3, groundwater samples will be collected on 25-foot centers near MW-L1, the southwest corner of the former manufacturing facility, and the former chrome recovery unit (i.e., approximately 37 total grid sample points). [The Geoprobe™ will be advanced to the water table and a groundwater collected.] The groundwater sample will be immediately transferred to laboratory supplied containers and transported via next day delivery to the laboratory. The groundwater samples will be analyze for the presence of target VOCs including: TCE, 1,2-DCE (total), vinyl chloride, and benzene. In addition, other degradation products of TCE not previously detected during the Phase II RFI will also be added to the target list of compounds. These include: 1,2-dichloroethane (DCA), 1,1-dichloroethene (DCE), and 1,1-DCA. Also, aromatic compounds ethylbenzene, toluene, and total xylenes will be added to the list of target compounds for sample locations in the vicinity of former kerosene tanks in Unit K.

A van-mounted hydraulic hammer will drive the Geoprobe™, which consists of 3-foot lengths of 0.75-inch-diameter threaded steel pipes with detachable drive points. After the probe is inserted into the groundwater, the probe will be withdrawn approximately 1 foot to create an annular space from which to collect a representative sample. A section of polyethylene tubing will be inserted through the probe into the water. The aboveground end of the tubing will then be connected to a peristaltic pump, and a vacuum applied to extract a groundwater sample. The vacuum will be pulled until the water reaches the pump. At this time, the pump will be turned off, the tubing disconnected from the pump, and the water in the tubing drained into a 40-milliliter (mL) glass vial sealed with a Teflon™-lined septum screw cap.

For QA/QC objectives, various QA/QC samples will also be collected and analyzed. These include: one blind duplicate sample for every 20 samples collected as to check on



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laboratory quality and a equipment blank sample of deionized water passed through the polyethylene tubing and peristaltic pump to check for cross-contamination.

All downhole drilling equipment will be steam cleaned prior to use. The Geoprobe™ and all downhole equipment will be decontaminated between sample locations by a deionized water rinse, potable water and Alconox® solution wash, followed by a deionized water rinse. Based on the sampling method selected, soil cuttings are not anticipated to be accumulated during drilling. However, if any soil cuttings are accumulated during use of the Geoprobe™, they will be drummed for temporary storage at the site prior to disposal. Containerized soil and purge/decontamination water will be handled per the management plan for containerized soil and water presented in Appendix B of the approved Phase II RFI Work Plan.

All grid borings will be staked and surveyed for location in accordance with the approved RFI Work Plan.

Objective 3 - Screening Level Evaluation (Sediment)

The Phase II RFI dated June 22, 1994 concluded that the sediment of Red Cedar River was impacted by low levels of PCBs, cyanide, and PAHs within 1,300 feet of the site. The significance these results with respect to ecological risk will be evaluated through a screening level risk assessment prior to planning or conducting additional investigation. This assessment will involve comparison of detected concentrations to available guidance levels concerning sediment chemistry of wadable streams, biological effects of chemical concentrations in aquatic sediments, and surface water quality assessments.

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

Quality assurance and quality control objectives for the laboratory are described within the *Task 4: Quality Assurance/Quality Control Plan* dated October 17, 1990. All data packages provided by the laboratory will be reviewed for compliance with Task 4.



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DATA MANAGEMENT PLAN

Data management objectives will follow the Data Management Plan described within the *Task 4: Quality Assurance/Quality Control Plan* dated October 17, 1990. The work activities, as described above, and their management will be conducted by the Cincinnati office of Dames & Moore on behalf of JCI. The overall management approach to satisfy the RFI includes the designation of qualified personnel and comprehensive project tracking.

JCI personnel designated for the Phase III RFI project include:

- Mr. Mike Stoelton - Environmental Engineer

Mr. Mike Stoelton will be the JCI contact. He will be responsible for ensuring that the Phase III RFI is implemented and completed in accordance with the approved Work Plan.

Dames & Moore personnel designated for this project are:

Mr. Dennis P. Connair - Project Director

Mr. Michael A. Wagner - Project Manager and
Field Activities Director

A brief description of their responsibilities and qualifications is presented below.

Dennis P. Connair, C.P.G., an Associate with Dames & Moore, will provide overall direction for the investigation and will be the primary point of contact with the regulatory agency. Mr. Connair has 12 years of experience with Dames & Moore including extensive work in glacial terrain. Mr. Connair will be responsible for committing the necessary staffing and subcontracted resources to complete the project.

Michael A. Wagner, project geologist, will serve as the project manager and field activities director. Mr. Wagner has been with Dames & Moore for 9 years. He will monitor the budget, and will schedule and coordinate personnel to accomplish required



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tasks for the project. Mr. Wagner will also coordinate and manage field activities. He will also be responsible for the final Phase III RFI report.

In addition to the above mentioned personnel, Dames & Moore has a large, professional staff of environmental scientists, geologists, hydrogeologists, and engineers to support the needs of this project, as directed by the project manager. Dames & Moore also maintains a large support staff of typists and technical illustrators experienced in the production of documents for regulatory submission.

SCHEDULE

Field activities will require approximately 2 to 3 weeks to complete. Laboratory analyses for groundwater from boring samples and selected monitoring wells will be require another 3 to 4 weeks. Upon receipt of these analyses, a draft Phase III RFI report will be prepared. The report will include a discussion of the investigative procedures, sample analytical results, QA/QC, a discussion of the possible source(s) of TCE in the vicinity of MW-L1 and the former manufacturing facility, and a screening level evaluation of the sediment samples collected during the Phase II RFI.



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If you have any questions regarding this Work Plan, please contact Mr. Mike Stoelton at JCI at (734) 254-5657.

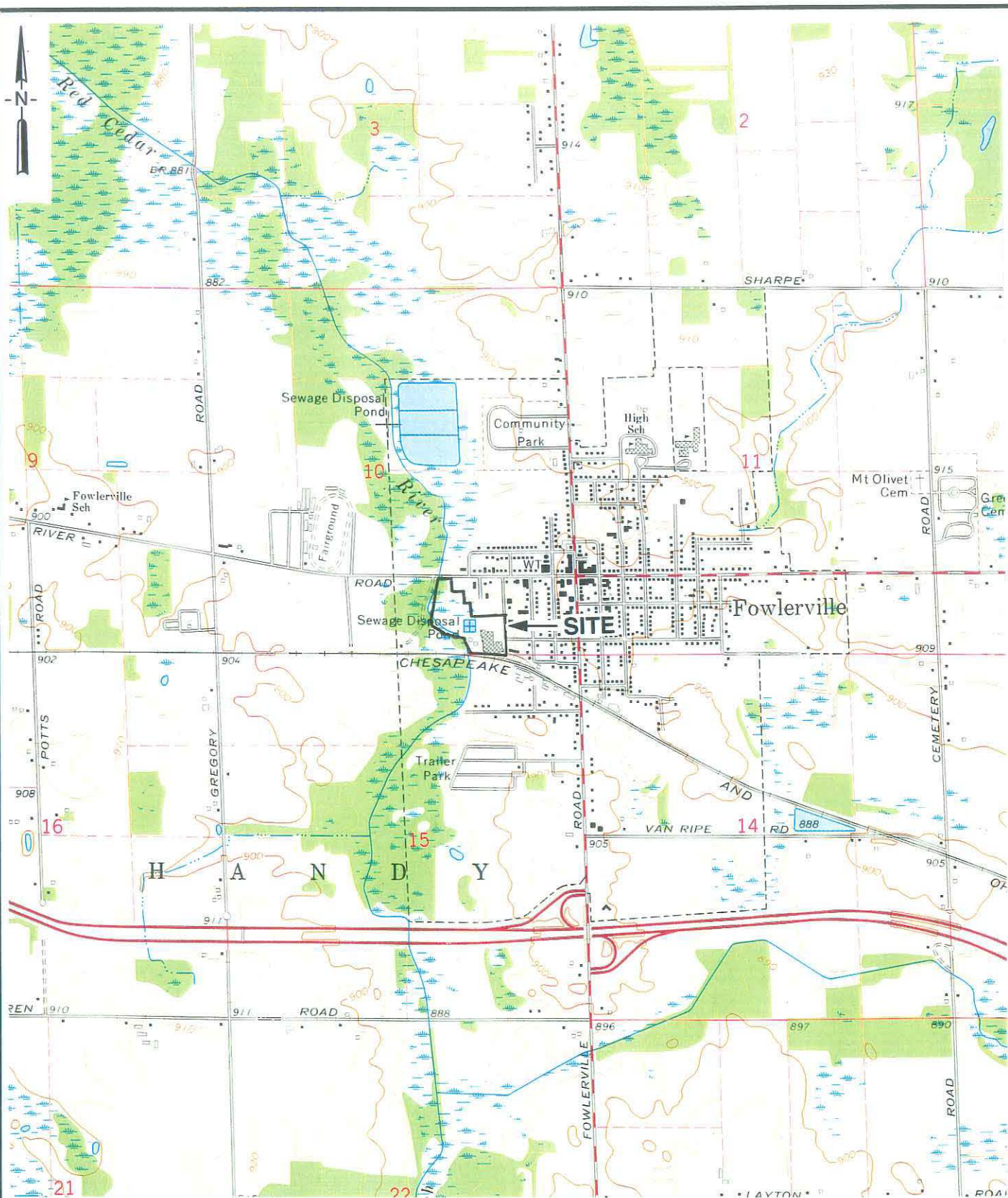
Very truly yours,
DAMES & MOORE

Michael A. Wagner
Project Manager

Dennis P. Connair, C.P.G.
Associate

MAW/DPC:JCI(1)-121
20209- 016-121
Attachments

JOHNSON CONTR. 09-016-0101-121



0 2000 4000
SCALE IN FEET



MI
Quadrangle
Location

BASE MAP SOURCE: USGS 7 1/2 minute
topographic quadrangle map: Fowlerville,
Michigan 1973.

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FORMERLY STANLEY TOOLS FACILITY
FOWLerville, MICHIGAN

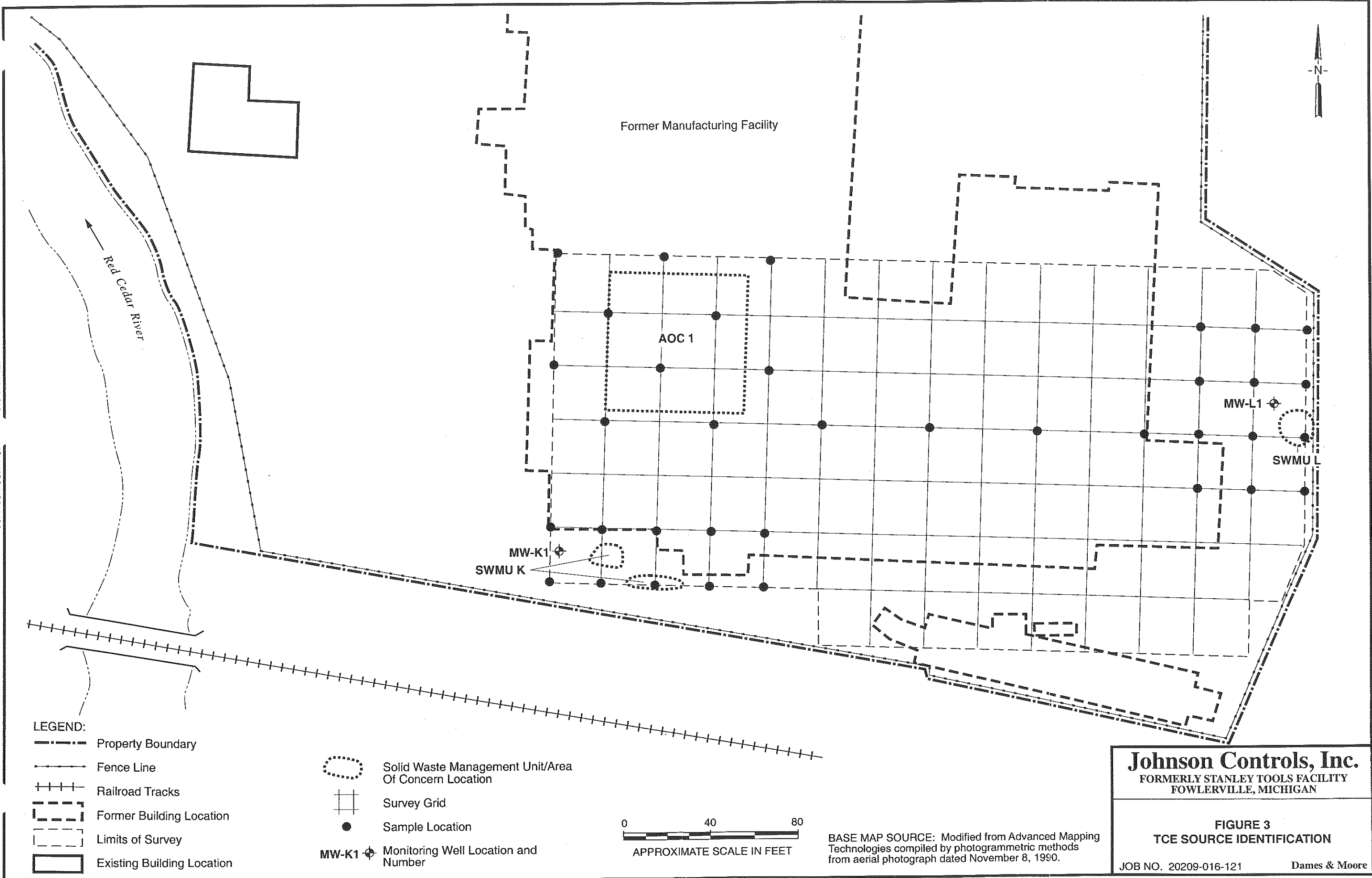
**FIGURE 1
SITE VICINITY MAP**

JOB NO. 20209-016-121

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-016-0101-121

JOHNSON CONTROL





BASE MAP SOURCE: Modified from Advanced Mapping Technologies, compiled by photogrammetric methods from aerial photography dated November 8, 1990.